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The Personnel Journal

Continuing the Journal of Personnel Research

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The Personnel Journal

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A Test for Drivers

By William Forster, *Prague, Czechoslovakia*

This article by one of our foreign members, a distinguished technopsychologist and engineer, is noteworthy for its description of technique in attacking a problem which many American and European investigators have faced,—the selection of competent drivers of automobiles, street cars, buses, or aeroplanes. Dr. Forster presents a new multiple-choice reaction test, which he has found valuable in employment practice.

THE motor reactions that constitute the occupational performances of motor car drivers, electric tramwaymen, cranemen, aviators, etc., are typical pattern-reflexes. The thing required in all these vocations is to control a steering gear of a machine by means of movements adapted, and carried out in response, to a complex outward situation represented in consciousness by a complex of sensations, and to vary these movements with changing conditions.

APTITUDES TESTED BY THE FORSTER APPARATUS

The essential point in all these occupations is to react promptly and correctly, *i.e.*, to carry out as quickly as possible a movement required in a given situation.

If a laboratory test is to have prognostic value, *i.e.*, if its result is to be indicative of the examinee's practical ability, it must be so arranged as to correspond closely with the conditions of the professional performance. Not in the sense, of course, that it should copy the actual work in all its details, but in the sense that it must preserve its *psychological structure.* It is impossible to test any aptitude by the corresponding professional performance, *e.g.*, the aptitude of a prospective motor car driver by having him drive a motor car, for the motor car driving always requires some training which, of course, cannot be expected to be found in a novice. Moreover, the dexterity and ability of a trained motor car driver depend on a number of factors that are independent of each other. The total result of such a test would neither admit of estimating the candidate's ability to perform individual partial operations involved in his work, nor would it enable us to form an idea of his power of overcoming special difficulties and critical moments he may encounter in driving his machine.

The greatest difficulty met with in devising a useful laboratory test consists in hitting off the psychological structure of the practical performance—in finding out the essential features that characterize the psychical

functions involved in the performance, and coöperate towards the achievement of the resultant effect. In motor car and tramway driving the determination of the motor components of the driver's job does not usually meet with difficulties; the motor car driver's job consists of a small number of movements quite simple and isolated by which the steering wheel, the brake and the throttle are controlled and which are rarely found to occur in more complex combinations. The thing is, of course, more complex in the steering of an aeroplane. What is here involved is an elaborate coöperation of movements graded in intensity and continuous, *i.e.*, gradually passing into one another.

The point of highest importance in all these occupations is their sensorial aspect, the complexity of the sensory percept involving the aggregate of sensations that determines the motor reaction. For it must be remembered that a reaction is never discharged by a whole complex of sensory excitements aroused by a given situation. Certain characteristic elements combine to form a pattern and it is to this pattern that the motor reflex is attached. There are accordingly two factors that determine our ability to react promptly and correctly to an outward situation:

1. The span of the sensory field,—the number of elements which a person can embrace by a single act of attention.

2. The ability to analyze into elements a vast complex of sensations and to select among these elements those which are essential to the performance involved in the job. This choice of essential elements is a function of inward attention, and may be explained by the fact that we keep ready in our mind certain groups of sensory elements which we watch for in the complex experience, and for these receptual groups the corresponding reflexes are pre-excited.

The instruments used in measuring accuracy and rapidity of sensorimotor reactions are known as *reaction apparatuses* when to a single stimulus a single reaction is made, and *distribution apparatuses* when we are to react by prescribed movements to a complex field of perception. The simple reaction instruments, those in the form of the original attempt of Wundt, are now entirely excluded from psychotechnical laboratory work, for it has been shown that in no occupation is the work performed under such simple conditions as it is in the coördination of one single movement to one previously known sensation. When such experiments are used at all, stress is no longer laid on the average time of the reactions, but on the regularity and constancy of the reaction time, measured in terms of the standard deviation. Instruments that exhibit a vast complex of sensory stimuli are called distribution apparatuses, because it is assumed that the essential mental function concerned in working with them consists in *distributing attention to many sensory stimuli.* Now, from the foregoing analysis, we see that the gist of the problem lies elsewhere. What is here essential is:

1. To select (apperceive) in the complex impression among the numerous groups of sensory elements the ones whose pre-excited motor reactions

are ready to result in movement, and at the same time,

2. To keep in mind, and to remain ready to respond to, the other non-essential elements, for the stimulus to be reacted to in the sense of instructions may possibly appear even in the fringe of the complex impression.

The ability to react to the selected essential elements is usually called concentrated attention; the power of keeping in mind even the other non-essential and accessory elements may be termed distributive attention. In ordinary life we call the latter cautiousness, vigilance, prudence and the like. *What is accordingly essential to the performance of the risky occupations is rather a due proportion of concentrated to distributive attention.* The nervous energy must spread, not merely to the motor reflex, but an adequate part of it must be divided among the accessory centres, and from these it must keep in a state of tension the coördinated motor groups that must enter into activity as soon as an emergency demands their intervention. A driver rushing down a street crowded with vehicles must first of all pay attention to the traffic on the road immediately before him, and must select from these complexes the cues he requires for steering his machine. But besides this, he must keep in mind also what is occuring round about, even in the space which his vehicle will never enter, for even there a thing may happen that will require a prompt reaction,—a child may jump from a sidewalk on to the road, for example.

There are two kinds of people with respect to the readiness of their reactions. One kind reacts promptly and, as it were, explosively, which explosiveness seems to suggest that their reactions are only discharged by a fragment of the outward sensory or the inward ideational situation. The other kind is tardy, hesitant, and, so to speak, obstructive. If this tardiness is not directly due to some sluggishness of the nervous substrate, it may be ascribed to the fact that the individuals in question direct attention uniformly to all the details of the situation and are not capable of selecting from the complex experience those characteristic features that are relevant under the given conditions and indispensable for making a decision in the given case. This shows again that the risky occupations of drivers require a due proportion of both these tendencies to reaction to stimuli.

The apparatus which I have constructed to measure the vocational aptitude of drivers of all kinds is based upon the assumption of the truth of the above considerations. What the drivers really perform are reactions to complex situations, in which the rapidity and accuracy of movements depend on the abstraction of a reflex pattern from a whole complex of sensory percept.

DESCRIPTION OF THE APPARATUS

The subject is seated before an upright board which is divided into three fields (fig. 1).

Before the board, within the subject's reach, a number of keys are placed. The three middle keys are black and correspond to each of the three fields of the board. Beside

these, there is a white key to the right and a red key to the left.

The instructions read as follows:

"You see before you three fields. On each of these fields, lights of various colors will be displayed."

First task. "When you see on any of the fields two lights of the same color, press down the key that belongs to that field. When the lights of the same color appear on two fields, press down the two corresponding keys."

Second task. "When on any of the fields a white light (warning light) appears, press down the white key on the right. And at the same time press down the key that corresponds to the field on which the white light is shown."

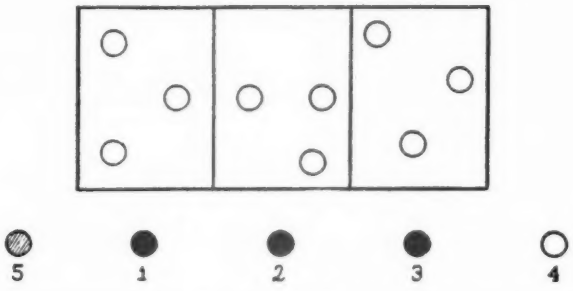


FIG. 1. ARRANGEMENT OF LIGHTS AND KEYS IN FORSTER APPARATUS

Third task. "When a signal appears that includes nothing to be reacted to, *i.e.*, neither two lights of the same color nor the white light, press down the key placed on the left (negative reaction) in order to show that you were attentive, but did not perceive anything requiring to be reported."

ADVANTAGES OF THE APPARATUS

This system of signals has the following advantages:

a. It is approximately as complex as the actual stimuli and reactions with which drivers and aviators have to work in performing their service. On each of the three fields of the apparatus, three lights are displayed simultaneously, nine stimuli in all, which the subject has to convert into the proper reaction groups. The five keys correspond approximately to the number of levers in whose combined manipulation the driving of a motor car or an aeroplane consists.

b. The right reaction is a warrant that the subject has made his decision in consideration of the complete complex of stimuli and that he has not overlooked any of the elements of the composite signal. It shows that the subject possesses adequately both distributive and concentrated attention, for he can embrace by an act of attention a wide perception field and can respond to a selected group of elements according to a prescribed reaction plan.

c. The practical advantage of this system of signals is that the coördination of stimuli to movements is simple and natural and does not require any considerable amount of practice. The relation of the three keys to each of the fields is locally determined, the white key corresponds to the white light, and also negative reaction by the fifth key is quite natural. So it comes about that eight reactions entirely suffice for a person of normal

intelligence, capable of comprehending the continuity of tasks, to acquire the necessary amount of practice.

DISTRIBUTION OF RESULTS AND CLASSIFICATION OF CANDIDATES

Besides the eight preliminary reactions which the subject is given as a practice series, the test consists of twenty-four reactions arranged in an order which we describe in a later paragraph. The reactions are recorded electro-magnetically on a band moving at a constant rate of one centimetre per second. Each key is connected with a pen which, when the key is depressed, makes a tracing upon the band. The time of exposure of the signal may be ascertained from the tracings left behind on all five lines that correspond to individual pens. And as we know by which of the keys the several signals must be reacted to, we easily read off from the record the moment at which the corresponding pens returned to their normal positions, *i.e.*, the moment at which the right and complete reaction has been discharged. Then we measure on the record the times of all the twenty-four reactions, add them, and divide the sum by twenty-four, thus obtaining the average reaction time of the examinee. The whole process of calculation does not take more than five minutes and shows that the apparatus is very convenient.

Now let us turn to the question of how the reaction times are distributed among the people who have been examined. (See fig. 2.) The horizontal scale represents the reaction times in tenths of a second, the vertical one the number of the measurements expressed in percentages falling under the several $\frac{1}{10}$ second intervals. In the figure, three frequency curves are plotted. Line *A* represents individuals with a university education, line *B* candidates possessed of a lower grade of education, and line *C* indicates the distribution of the total number of cases (1000). It will be observed that the results plotted with line *A* are far more favorable than line *B*. This of course cannot be interpreted to mean that school education is likely to increase the span of apprehension and readiness in reaction. It is rather general intelligence that is responsible for the more favorable results, as we shall demonstrate numerically in the last paragraph. For gauging the results, and for estimating the qualification of candidates, we must, of course, employ curve *C*. This curve has a typical bell-shaped form, and, as one may notice, it rises more steeply at its left end, owing to the fact that the absolute interval of $\frac{1}{10}$ of a second does not give a uniform measure of readiness in reaction for very short and very long reaction times. It is obviously far more difficult to improve a performance by $\frac{1}{10}$ of a second with an average reaction time of 1.9 seconds than with a reaction time exceeding 4.3 seconds. To classify the performances, we make use of the well-known method of designating the middle 50 per cent of reactions as good, the next 20 per cent of better and 20 per cent of worse reactions as very good and bad respectively, and the 5 per cent of best reactions as excellent and the 5 per cent of worst as very bad.

But given the fact that our curve does not exhibit normal distribution

and that in consequence the middle performance does not coincide with the mode, it is necessary to adapt slightly this classification rule. We shall consider as an average performance that which corresponds to the mode,—a reaction time of 3.4 seconds. Of the cases better or worse than this modal performance we shall then form two groups and shall describe 50 per cent of the worst performances of the left (good) group and 50 per cent of the best performances of the right (poor) one as *good*, the next 40 per cent of better measurements of the left group as *very good*, and 40 per cent of worse measurements of the right one as *bad*, 10 per cent of the best performances of the left group as *excellent*, and the remaining 10 per cent of the worst results of the right group as *very bad*. It is in accordance with these principles that the classification of the results plotted on our curve has been carried out.

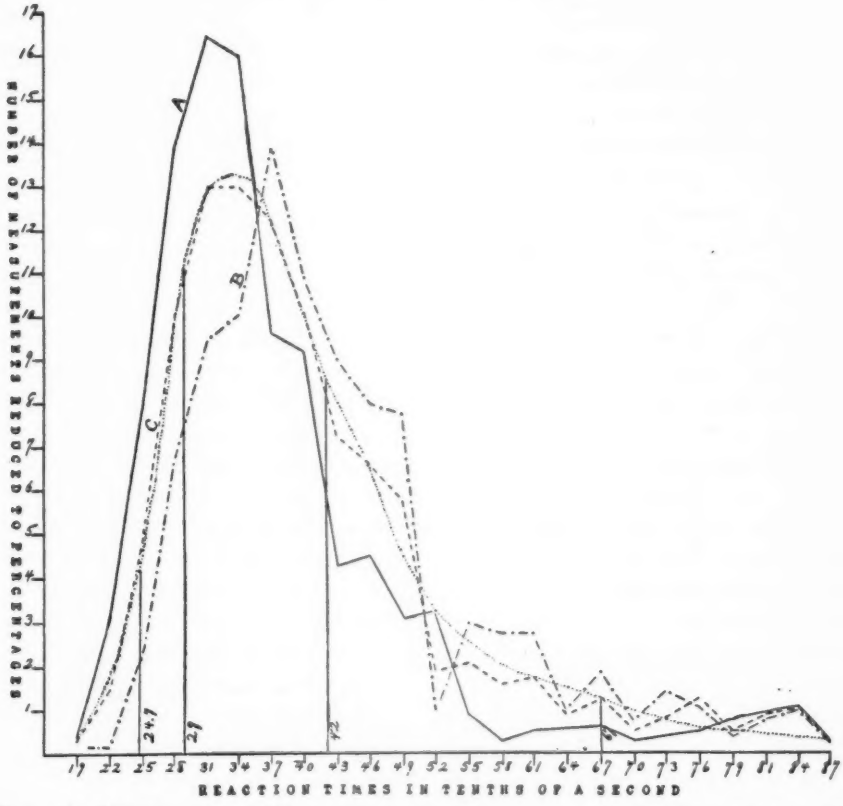


FIG. 2. CURVES FOR 1000 INDIVIDUALS TESTED BY THE FORSTER APPARATUS SHOWING DISTRIBUTION OF AVERAGE REACTION TIMES
A, men with university education; *B*, others; *C*, total

Up to 2.47 seconds the performance is regarded as excellent, up to 2.9 seconds as very good, up to 4.2 as

good, up to 6.7 as bad and the remaining longer times as very bad. It is worth noting that these fundamental reference points of the distribution curve are very constant and do not vary with the different samples we may observe. "Readiness in reaction" is measurable in terms of the units as defined.

It is naturally a matter of practical experience to determine the critical score for the ability required to run a car or an aeroplane. In my judgment, good performances up to the reaction time of 4.2 seconds must always be recognized as satisfactory, whereas the reaction time of 5.5 seconds must be considered as the extreme limit of the ability, to be applied in cases deserving special consideration, *e.g.*, when the candidate's success in other tests is unusually favorable, or when owing to an increased demand for employees, combined with an insufficient number of qualified applicants, it is necessary to reduce the rating requirements to a minimum.

RESISTANCE TO FRIGHT AND EMOTIONAL EXCITEMENT

The apparatus possesses still another valuable advantage. It helps us to ascertain the candidate's power of resisting fright and emotional excitement. Usually the moment of fright is introduced into experiments in the form of a set of heterogeneous and disturbing stimuli. A bomb is made to explode or an alarming sound is produced. But leaving aside the fact that the effects of such disparate disturbing moments may be studied in other ways (by means of the psychogalvanic reflex of Veragut or by means of changes in respiration or pulse) we are interested in knowing how a person can withstand surprise, confusion, disturbance and fright resulting from the work proper.

We remain calm as long as the results of our activity fit our expectations. But when an effect occurs for which we are not prepared, then the energy liberated by the impression does not find at once its efferent channel and tends to diffuse itself throughout the complex of sensory and motor centers that are dynamically connected with the centers directly affected by the stimulus (diffusion of excitement). These centers lose the capacity of differentiated integration of the nervous impulses and what ensues is a disturbance of the correctness and accuracy of the performance that is controlled and coördinated from these centers. Emotional excitement (fright, astonishment, surprise) is always accompanied by some disturbance of the bodily functions and leads to confusion. These phenomena may be readily observed by our apparatus. When the motor reaction results in a foreseen effect, the lights go out, and the work goes on smoothly, exactly and without hesitation. But when the expected effect does not occur and the lights continue to shine, mental confusion ensues. This confusion manifests itself, as a rule, in two types of action: (*a*) *bewilderment;* the subject depresses the keys without order or reflection, as if out of his senses; (*b*) *torpor;* the subject's activity becomes entirely paralyzed, he is for awhile incapable of any action or decision at all. Mental confusion always manifests itself

in a disproportionately prolonged reaction time.

Now the order of signals in our apparatus is arranged in such a way that certain critical combinations of lights must regularly throw the subject into confusion. The several signals must be reacted to by the keys given in table 1.

TABLE 1

ORDER NUMBER OF THE REACTIONS	REACTION KEYS	ORDER NUMBER OF THE REACTIONS (*cont.*)	REACTION KEYS (*cont.*)	ORDER NUMBER OF THE REACTIONS (*cont.*)	REACTION KEYS (*cont.*)
1	2	9	1, 2	17	3, 4
2	5	10	5	18	1, 2
3	1, 3	11	1	19	2
4	3, 4	12	2, 4	20	5
5	5	13	3	21	3
6	1, 2	14	1, 4	22	2, 4
7	1, 4	15	5	23	5
8	3	16	1, 3	24	2, 3

Most prolonged times are obtained with the sixteenth reaction, then with the nineteenth, and a marked prolongation may also be observed in the eighth reaction. The prolongation of the sixteenth reaction is due to the fact that the same is preceded by a series of relatively simple reactions to which the examinee gets accustomed and thus ceases to think of the other pair of identically colored lights. Moreover, the two pairs appear toward the sides of the board, and are, by consequence, not easy to perceive. The difficulty of the nineteenth and eighth reactions is caused by the two lights of identical color being widely separated, so that the subject is likewise unable to attend to them at the same moment. The prolongation of the critical reactions is very considerable. Their duration with able individuals is usually two and three times as long as the normal reactions and with less able ones it reaches 20 to 30 seconds. At the same time, the confusion results in an irregular and relaxed execution of some of the next reactions. It is needless to say that the duration of these critical reactions, especially when they are exceedingly prolonged, is far more significant than the average duration of the normal reactions and should, in consequence, be recorded separately. But as it was found that the duration of the critical reactions was usually proportional to the time of the normal reactions, and as the extreme duration of the critical reactions always exerts a considerable influence on the total time that is necessary for the execution of all the twenty-four reactions, we may consider the average reaction time as a reliable indication of the examinee's practical efficiency.

CORRELATION BETWEEN READINESS IN REACTION AND GENERAL INTELLIGENCE

I have been led to the study of this relationship by the conviction supported by theoretical considerations and confirmed by many years' experience, that it is almost exclusively general intelligence that determines our aptitudes for all the various lines of industrial undertaking. This does not mean, of course, that I would deny the existence of special capacities. I only assert that each of these capacities develops by training on the base of a certain grade of general intelligence. In adulthood, motor dexterity

is usually found in connection with relatively low degrees of general intelligence, and shows, in consequence, a negative correlation with the higher intellectual functions involving abstraction, and developing in higher levels of general intelligence. Dr. J. Vaña, director of the Psychological Laboratory of the Electric Works of the City of Prague, who has made a special study of the trade ability of tram drivers with reference to the theoretical views that I support here, concludes that the correlation between a candidate's practical success in tram driving and his intelligence is almost as high as the correlation between his practical success and the whole set of special examinations, intelligence tests included, and that in consequence, the prognosis based on the degree of intelligence is almost as reliable as the judgment formed on the basis of the whole set of special examinations.[1]

I was able to confirm the dependence of success in the reaction test upon the degree of general intelligence by direct computation. For measuring general intelligence I make use of the Army Alpha Test, to which I added several control tests.

The coefficient of correlation between the number of points attained in the Alpha test and the reaction time has been found to be 0.48. This, of course, does not indicate any close co-variation of the two measurements, yet a deeper insight into their correspondence may be obtained by analyzing the scatter diagram (fig. 3).

[1] Consult his paper read at the Fourth International Congress of Psychotechnology, Paris, 1927.

We divide the whole range of intelligence into 20 groups, each of 10 points, and the reaction times into 20 groups, each of $\frac{1}{10}$ of a second. We then calculate for each intelligence group the corresponding average reaction time. Connecting the points thus obtained we get the line *S* which indicates the dependence of the reaction times on the degree of intelligence. Similarly, we compute for each group of reaction times the corresponding degree of intelligence, and thus we should get a line representing the dependence of the degree of intelligence upon reaction time.

The line *S* illustrates clearly how readiness in choice reaction varies with degree of intelligence. It shows that the rapidity of reaction rises very rapidly and regularly up to the interval 70–80, which corresponds to I.Q. 92. This I.Q. seems to be most suitable for the test of complex reaction, so that we may say, provided, of course, that the functional structure of this test fits the requirements of the car driving service, that an I.Q. of 92 is most favorable to the vocation of car driver. The reaction time corresponding to this optimum ability is four seconds, and may be considered as entirely satisfactory for this vocation. Whoever is not endowed with this optimum degree of intelligence, will scarcely meet the requirements of the service, and his performance will probably lag behind the efficiency of an entirely qualified car driver.

On this occasion, it is interesting to note how the reaction time varies with the higher degrees of intelligence. The curve *S* indicates that the reaction time shows a slight decrease with in-

creasing intelligence even above I.Q. 92. I believe, however, that this decrease of the reaction time must be ascribed to other causes than in the degrees below I.Q. 92. This decrease can no longer be due to *special adaptation of higher intellectual functions to this special kind of mental work*, as was the case under I.Q. 92, but rather to a *higher capacity of spontaneously giving and concentrating attention to any kind of mental work*. We have, however, good reason to believe that this increased "intentional" effort of attention and voluntary concentration can be maintained only for a short time and in the limits of the special conditions of the laboratory test, and that it is, in consequence, something willed, artificial and unnatural on which we cannot rely under the constant and monotonous conditions of the vocation. I am, therefore, inclined to believe that the safety of the car driving service is just as well insured with an I.Q. of 92 and with

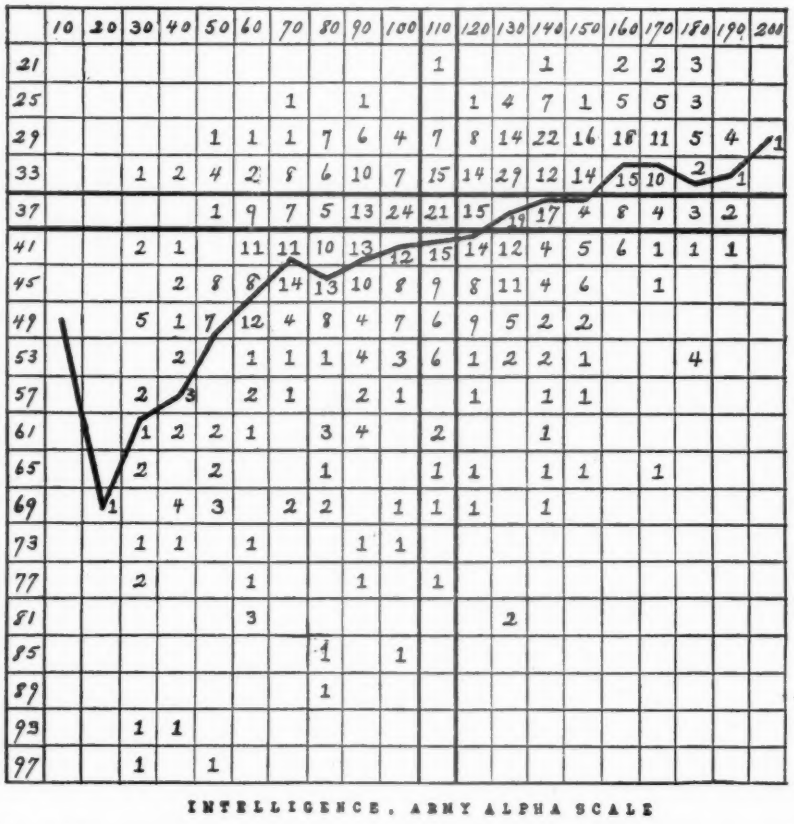


FIG. 3. SCATTER DIAGRAM OF NUMBER OF POINTS ON ARMY ALPHA AND CHOICE REACTION TIME ON THE FORSTER APPARATUS

reaction times below 4.0 seconds as with the higher degrees of intelligence and shorter reaction times.

On the whole, I believe that the three fundamental tests which help us to ascertain degree of intelligence, reaction time (by means of the apparatus described above) and span of sensory perception,[2] can replace every kind of special examination, and measure entirely the qualifications of car drivers of all kinds, provided the results of these tests fall in the elastic limits of the classification norms established by experience based on many thousands of measurements made in our country.

[2] On which I shall report on a later occasion.

(*Manuscript received April 11, 1928.*)

Predicting Success of Y.M.C.A. Secretaries

Diagnostic Value of the Personal History Record

By Harvey E. Becknell, *Calcutta*

Prediction of the probable success of an applicant is at least as important in social and religious careers as in business. Statisiical evaluation of significant items of personal history is here shown to be one aid to wise selection of general secretaries.

This article summarizes the methods and results of a study of the personal history data of 172 general secretaries of the Young Men's Christian Association who had been previously ranked for success in the general secretaryship.[1] The object of the study was to devise a scoring system which could be used in connection with the personal history record.

The various items of data were studied in relation to the ranking for success. By statistical treatment the significant items were segregated and a scoring system devised. When this scoring system was applied to the personal history records of eighteen general secretaries who had left Y. M. C. A. work it was found that it could have been predicted that fifteen of these or 83.3 per cent would be failures.

WHAT makes a good secretary? This is a question that continues to puzzle those in local associations and national Y. M. C. A. personnel agencies who have to do with the selection, training, and placement of secretaries. The data most largely relied upon are those contained in the personal history blank. It was therefore decided that a study should be made of the relation of the items on the blank to subsequent success in the vocation.

[1] The full report of the study may be found among the unpublished Master's theses of Columbia University, New York, (1926) under the title, *A Preliminary Personnel Study of Y. M. C. A. Secretaries; An Appraisal of the Personal History Record*, by Harvey Earl Becknell.

CRITERION OF SUCCESS AS A SECRETARY

Extensive personal history records were obtained from 172 general secretaries of the Middle West, all of whom had been in this work five years or more. Five judges were selected who were secretaries of national prominence and whose work in the Middle West brought them into personal contact with the entire 172 local general secretaries. These five judges were asked

to rank the group according to "the general effectiveness of each as judged by his past, present and probable future contribution to his community and to the Association as a whole." The judges made their rankings independently of each other.

The rankings of the five judges were then added together, thus giving a composite ranking and, presumably, the best ranking. A study was made of the deviation of the ranking of each judge from the composite in order to test the amount of agreement of the judges and to evaluate the judicial capacity of each. Generally speaking, the judges agreed more closely on those of the group whom they considered successful secretaries than they did upon those they placed at the bottom of the scale of success. Nevertheless, there was a very substantial agreement in both cases, so much so that we were confident that the judges were correct in their composite rank.

Considering the group as they stood in the composite rank, we decided to select for our study the first quartile, representing the most successful secretaries and the lower quartile which included the least successful secretaries. What differences in experience and training would the study of these two groups reveal?

SIGNIFICANT ITEMS OF PERSONAL HISTORY RECORD

These two groups, namely the most successful and the least successful secretaries, were compared on every item of personal history. Varying amounts of differences were found for each of the items. The significance of the items was tested by the application of Yule's "significance of difference" formula (standard error = $\sqrt{\frac{pq}{N}}$, where pq are the observed proportions and N is the number of cases).[2]

By applying this formula to the 30 items selected for study, the following were found to test highest and therefore to be significant for success in the general secretaryship:

- Age at appointment as general secretary
- Place of birth
- Number of children
- Church membership
- Amount of education
- Association College attendance
- Special study of business subjects
- Active in more than one form of college athletics
- Editor of college publication or president of literary society
- Member of college debating team or active in oratorical contests
- Officer of student Y. M. C. A.
- Member of a fraternity
- Previous vocation
- Length of service with Y. M. C. A. prior to appointment to general secretaryship

Having thus determined which of the items on the personal history record bore a definite relationship to success or failure in the secretaryship, it seemed desirable to express these in terms of a scoring system which would enable the employing body to know *objectively* where a given applicant stands with regard to his previous experience and training. In order to do this, it was first obviously necessary to assign definite numerical weights to each of the significant items.

In selecting among the significant items for those which we proposed to

[2] G. V. Yule. *An Introduction to the Theory of Statistics.* J. B. Lippincott Co., pp. 254-266.

weight, we were limited to those for which we had full data on each of the 172 cases. We placed a second limitation on ourselves by selecting only those items upon which the reliability, as tested by Yule's formula, was high. Nine items were selected on this basis.

Having thus selected and tested our items, we proceeded to secure the weights by following in principle the method used by Miss Cope of the Phoenix Mutual Life Insurance Company in her study of the personal history record data as an index to success in selling.[3] The first step in this method is to reduce the data for each significant item to percentages for the most successful and least successful group of secretaries. For example, if we take the item *age at appointment*, we find that in the two groups 38 men were appointed general secretaries before they were "over thirty years of age." Of this number 28 were ranked as most successful and 10 as least successful secretaries. When these are reduced to percentages we find that 74 per cent belong to the most successful group and 26 per cent to the least successful group. Thus, a man of 30 or under has the chances of 74 to 26 of becoming a successful secretary. Similarly we find that of the men who were appointed general secretaries after they were thirty, only 30 per cent were of the most successful whereas 70 per cent were of the least successful group. In this case a man who is appointed general secretary after he is 30 has the chances of 30 to 70 of becoming successful. The technique employed here is, therefore, to take as a score the chances of success on each of the nine significant items. The following is a list of the items and the corresponding weights or score values:

1. Place of birth:	
Farm	67
Town or city	39
2. Academic record:	
3 years of college or under	42
4 years of college	62
3. Y. M. C. A. college record:	
Attendance	31
Non-attendance	57
4. Special study:	
Business course	60
No business course	48
5. Church membership:	
Congregational	71
Other	44
6. Pre-Y. M. C. A. vocation:	
Student	80
Other	31
7. Age at appointment:	
30 and under	74
Over 30	31
8. Children:	
None	25
One or two	60
Three or more	54
9. Pre-General Secretaryship Y. M. C. A. service:	
3 years or under	62
Over three years	42

Each of the nine items of the personal history record can, therefore, be scored on the basis of the above values, and the composite or total secured by adding the nine individual scores.

DETERMINATION OF CRITICAL SCORE

In order to test this grading system we scored the personal history data of our 172 men. Our object was to discover the so-called "critical" score which could be used as a norm in pre-

[3] G. V. Cope. *Selecting Salesmen.* Phoenix Mutual Life Insurance Company Bulletin, October, 1922.

dicting success in the general secretaryship. The problem then was to ascertain the point on the range of scores below which the largest number of least successful men fell and above which the largest number of successes were tabulated. An inspection of the distribution indicated that the score 440 could be taken as the predictive index or critical score. The arrangement of the scores, above and below the critical score, is shown in table 1.

TABLE 1

Showing the percentages in each quartile of ability as Y. M. C. A. secretaries whose personal history scores were above and below the critical score of 440

QUARTILE OF ABILITY	HIGHEST	SECOND	THIRD	LOWEST
Per cent above critical score	88.1	69.9	51.2	18.6
Per cent below critical score	11.9	30.1	48.8	81.4

This table shows that by setting the critical score at 440 our scoring system selected 88.1 per cent of Q4 or the most successful and eliminated 81.4 per cent of Q1 or the least successful men. The percentages of the middle quartile groups seem to indicate that the scoring system tends to classify them also according to their rank for success. While it is obviously inadvisable to select men purely on the basis of the personal history score, it may, however, be granted that the scoring system would vastly improve the use of personal history data. The chief significance of the critical score lies in the fact that it represents a danger signal so far as the personal history record is concerned.

It is of interest to note the results of applying the grading or scoring system to the personal history records of the eighteen general secretaries who had left Y. M. C. A. work since they, with the entire 172 men, were ranked for success. Fifteen of the 18 or 83.3 per cent made personal history scores which approached the critical score of 440. Twelve of these 15 were actually below 440. Thus, on the basis of the scoring system, it could have been predicted of 83.3 per cent of these men, that they were not likely to succeed as general secretaries.

It would be unwise to claim too much for this study. Its chief value lies in the fact that it indicates the possibilities of significant results through the application of thorough investigation to the personnel requirements of social and religious organizations.

(Manuscript received January 26, 1928.)

Vocational Stability of Oberlin Alumni

By L. D. Hartson, *Oberlin College*

Some current superstitions about the numerous vocational indecisions and mistakes of college graduates are brought by Dr. Hartson into the spot light of fact.

The length of time the college man requires to become vocationally stable is determined from representative data concerning the graduates of one liberal arts college. The first and the final choices of vocation, the proportions who have remained in the occupation originally chosen, the amount of occupational experimentation, and the relative holding power of the different vocations are determined. The average time required to find the occupation of final choice is less than a year and a half. The choice of a specific field for a career in business, however, has often been made only after many preliminary experiments. There has been little transfer from one type of activity to a quite different type. In the case of the women, the length of time before marriage and the proportion of each occupational group who have married are reported. In a subsequent article are reported the results of a study "Intelligence and Scholarship of Occupational Groups."

THE data for this study were taken from the material gathered by Secretary George M. Jones for the 1926 Alumni Catalogue. Returns were received from all but 29 of the 2860 living alumni.

The classes chosen for this summary were those from 1914 to 1922. The questionnaires had asked for a vocational history from 1914 to date. Classes since 1922 were omitted from consideration. The number of years as graduates represented by these figures, then, range from four to twelve. One wonders, of course, how many of these recent graduates have made their final vocational choice. Inasmuch, however, as the average time intervening between graduation and entrance into the final vocation proved to be but 1.77 years with a standard deviation of 2.42 in the case of the men, and less than that in the case of the women, it happens that it was safe to include the class of 1922 in the study. Data are included for all of the 618 men and for 982 women. There are 15 other women without regular occupation who were not included in this summary. The occupational histories are remarkably complete. Some data were obtained for all but two of the graduates of the years covered by this study. There were very few individuals who did not account for all of the years. There were some errors of omission in the reports concerning the number of positions held. A few reports were made in this fashion: "High school

teaching from 1916 to 1920; library work, 1920 to date." In such cases it was impossible to determine the number of teaching positions held. There is no reason to suspect that there are enough cases in which a change in occupation was not reported to invalidate the general results.

Oberlin graduates. An unusually large proportion of them enter the professions, and especially higher educational work, when comparison is made with the graduates of eastern colleges. It may be well to keep these facts in mind when interpreting the data of this report.

TABLE 1

Occupational distribution of living male graduates of the Oberlin College of Arts and Sciences, for the period 1877–1926 grouped according to decade of graduation

OCCUPATION	'77–'86	'87–'96	'97–'06	'07–'16	'17–'26	TOTAL
Business	27	55	124	221	233	660
Education	9	68	89	208	302	676
College Education	8	34	46	99	161	348
High School Teaching	1	10	20	42	73	146
Other Educational Work	0	24	23	67	68	182
Journalism	8	11	8	17	20	64
Law	24	30	50	54	34	192
Medicine	4	20	36	44	73	177
Missionary Work	7	9	6	15	10	47
Religious Work	36	35	28	36	46	181
Scientific Work (Natural and Social)		11	14	29	39	93
Social Work		3	1	10	3	17
Y. M. C. A.	1	1	5	28	22	57
Other Occupations	22	44	46	67	44	223
Address Lost	2	2	4		1	9
No Occupation		1	2	3	3	9
Not Yet Located					31	31
Occupation Unknown		2	2	3	17	24
Retired	36	8		1		45
Gross Total	176	300	415	736	878	2,505
Names Entered Twice	14	10	23	86	102	235
Number of Individuals	162	290	392	650	776	2,270

The data have been tabulated in two ways: according to first choice, and according to final choice of vocation. One may obtain an idea of the general trend of vocational interest among Oberlin graduates by examining tables 1 and 2. It will be observed that the group chosen for this study of vocational stability are representative of the general tendency among

The study presents answers to these questions:

(1) How long does it take Oberlin graduates to find the vocation of their final choice?

(2) With how many occupations do they experiment before making a final choice?

(3) How many positions do they hold before making their final choice of vocation?

(4) What proportion have remained in their original occupation?
(5) In the case of those whose first is not their final choice, how long do they persist in the field of their first choice?
(6) How many years do those who ultimately become homemakers continue in gainful employment before marriage?
(7) What differences are there between the vocations in these respects?

TABLE 2

Occupational distribution of living women graduates of the Oberlin College of Arts and Sciences, for the period 1877–1926 grouped according to decade of graduation

OCCUPATION	'77–'86	'87–'96	'97–'06	'07–'16	'17–'26	TOTAL
Business	10	29	60	76	130	305
Education	26	79	157	303	612	1,177
College Education	12	20	40	68	72	212
High School Education	6	31	79	167	393	676
Other Educational Work	8	28	38	68	147	289
Homemaking—Married Women	131	171	224	559	392	1,477
Journalism	5	3	7	13	8	36
Library Work	2	14	13	18	42	89
Medicine	2	0	3	11	22	38
Missionary Work	2	15	10	28	26	81
Music	1	2	4	11	20	38
Secretarial Work		5	4	22	32	63
Social Work and Social Sciences	2	6	8	29	69	114
Y. W. C. A.		1	4	14	28	47
Other Occupations	5	7	7	19	28	66
Address Lost	5	8	3	3	2	21
No Occupation	8	7	14	15	30	74
Not Yet Located					31	31
Occupation Unknown			2	6	7	15
Retired	24	14	2			40
Gross Total	223	361	522	1,127	1,479	3,712
Names Entered Twice	40	52	63	129	180	464
Number of Individuals	183	309	459	998	1,299	3,248

LENGTH OF TIME TO FIND VOCATION

Contrary to the statement frequently heard in discussions of the need of vocational counselling, to the effect that it takes the average college man ten years to find his vocation, these data show that it has taken the typical Oberlin men but a year and nine months.

The question arises at once: what is the basis for determining when a professional man finds his vocation? The answer which is used in this study is this: a man may be considered to have made the choice of his vocation when he accepts a position in that field, or, in the case of the professions, when he enters upon professional study. The physicians, for example, entered medical school 1.18 years after graduation. (Failures in the professional school result, of course, in a change of occupation.) One-fourth of the medical men, however, were delayed in making a start in their careers by one

year on account of the war. When the period spent in the army is deducted, the average time for the medical men between graduation and the initiation of work in the final vocation is reduced from 1.18 to 0.95. When the corrections are made for each group, these figures range from 0.93 for the scientific group to 3.34 for the social workers. (See table 3, column 10 for figures for other occupations.)

TABLE 3

Oberlin men, 1914–22, tabulated according to final occupation

FINAL OCCUPATION	NUMBER OF MEN	YEARS BEFORE ENTERING		OCCUPATIONS BEFORE ENTERING		JOBS BEFORE ENTERING		NUMBER IN ARMY	YEARS IN ARMY—AVERAGE	YEARS BEFORE ENTERING WHEN PERIOD IN ARMY IS DEDUCTED
		Average	Sigma	Average	Sigma	Average	Sigma			
Business	174	2.20	2.57	1.25	1.23	1.37	1.37	36	1.33	1.93
Education	192	1.52	2.37	0.77	0.96	0.82	1.08	27	1.20	1.34
College Work	105	1.84	2.51	0.75	0.92	0.77	0.95	19	1.30	1.61
High School Work	58	1.74	2.64	1.03	1.01	1.17	1.16	5	1.00	1.66
Other Educational Work	33	1.14	1.83	0.36	0.77	0.36	0.77	3	2.00	0.96
Engineering	9	1.00	2.00	0.33	0.67	0.55	0.71			
Journalism	16	1.94	1.76	0.88	1.66	0.88	1.66	1	2.00	1.82
Law	36	2.20	2.89	0.66	0.90	0.81	1.17	11	2.00	1.59
Medicine	43	1.18	1.85	0.39	0.65	0.46	0.69	10	1.00	0.95
Religious Work	45	1.33	2.07	0.64	1.03	0.64	1.03	6	1.50	1.13
Scientific Work	28	1.21	2.30	0.43	0.78	0.43	0.80	7	1.14	0.93
Social Work	6	3.50	3.50	1.33	1.22	1.33	1.22	1	1.00	3.34
Y. M. C. A. Work	32	1.50	2.06	0.63	2.52	0.63	2.52	6	2.00	1.14
Others	33	1.63	2.52	0.69	0.85	1.00	1.37			
Total	618	1.77	2.42	0.86	1.09	0.93	1.14	105	1.35	1.55

NUMBER OF OCCUPATIONS TRIED

Examination of the figures reporting the average number of preliminary occupations shows that these 618 men did remarkably little exploring before settling into the field of their final choice. For the group as a whole, the experimental work involves an average of less than one job a piece. Half of the men have remained in the occupation of their first choice. For about 27 per cent, the final occupation was the second choice. About 15 per cent experimented in two fields before finding one which satisfied them; 6 per cent tried three; some of the others tried as many as six occupations.

But what is an occupation? With two exceptions, each of the catagories listed in the tables has been considered to be a single occupation. The headings, *Business* and *Other Educational Work*, are composites. The branches of business which have been treated as separate occupations are accountancy, advertising, banking, including the bond and mortgage brokerage, building and construction, insurance,

manufacturing, merchandizing, mining and quarreying, public utilities, real estate, travelling salesmanship, transportation and communication, and a few others that were sparcely represented. When a man moved from one manufacturing concern to another, he was counted as having changed jobs within the same occupation; if he gave up banking for real estate, he was counted as having changed occupations.

TABLE 4

Oberlin men, 1914–22, tabulated according to first occupation

OCCUPATION	TOTAL NUMBER	NUMBER PERMANENT	PER CENT PERMANENT	NUMBER IN SIMILAR LINE	NUMBER IN OTHER OCCUPATION	YEARS IN ORIGINAL OCCUPATION	
						Mean	Sigma
Agriculture	11	6	54.5		5		
Business	142	96	67.6	22	24	2.29	1.46
Banking	14	11	78.6		3		
Manufacturing	23	12	52.2	6	5		
Merchandising	24	21	87.5	2	1		
Selling	23	17	73.9	3	3		
Other Business	58	35	60.3	11	12		
Education	255	137	53.7	40	78	2.38	2.39
College Teaching	61	50	81.9	2	9		
High School Teaching	114	36	31.58	28	50	2.39	1.88
Other Educational Work	55	31	56.4	10	14		
Physical Education	25	20	80.0		5		
Industrial Chemistry	23	17	73.9	3	3		
Law	24	23	95.8		1		
Medicine	32	30	93.7		2		
Religion	45	33	73.3	1	11		
Y. M. C. A.	42	27	64.2	4	11		
All Others	44	26	59.0		18		
Grand Total	618	395	63.9	70	153	2.35	1.77

PROPORTION IN ORIGINAL OCCUPATION

The statement that but 50 per cent remained in the occupation first chosen does not agree perfectly with the figures reported in table 4, the tabulation according to first occupation. The number reported as remaining permanently in the original occupation is 395, or 63.9 per cent of the total. This is to be explained by the fact the numbers in the second column include those who returned to their first vocational love after an unsatisfactory "trial marriage" with another vocation. These total 14 per cent of the group. The column heading *Number Permanent*, table 4, should be so interpreted as to indicate those who, in 1926, were working in the field of their first choice. There were 70 other men whose final vocational choice was in a line similar to the original one. In addition to the 96 who are in the form of business first chosen, there are 22 in other forms of business. Only 24, or 17 per cent of

the original 142 have left business for other careers; 14 have gone into educational work, 7 into other professions requiring graduate preparation. On the other hand, those whose first choice was educational work have persisted in that field to a degree that may be surprising. Two-thirds of the 255 men who first chose education are still in that field; 54 per cent have remained in the same branch of educational work, and 15 per cent have transferred to other types of educational work, usually to college teaching. High school teaching shows the highest mortality rate, less than one-third of the men remaining in this field. About 25 per cent of the high school group, however, have entered other forms of educational work. Only 14 per cent have used high school teaching as a stepping-stone for professional careers other than teaching, and but 19 per cent have transferred to business positions. Ranked according to the degree of permanence of the first choice, the vocations ranged from law (95.8 per cent) and medicine (93.7 per cent) to high school teaching (31.58 per cent). (See table 4, column 3 for percentages for other occupations.) As one would have expected, there have been more changes of occupation among the business men than there have been among those entering the professions. When the vocations are ranked on the basis of the immediacy with which they were entered, they form the following series: law, miscellaneous educational work, medicine, scientific work, Y. M. C. A., religious work, law, other occupations too sparcely represented to be listed separately, college teaching, journalism, high school teaching, business, and social work. The rank is substantially the same if the occupations are arranged on the basis of the number of positions held before the final occupational choice was made.

PERSISTENCE IN ORIGINAL OCCUPATION

The last two columns of table 4 report the years of persistence in the original occupation for those who changed occupations. The figures are remarkably similar for the different lines of work. The 223 men who did not continue in the field first chosen remained in it two years and four months, on the average, before making the change to any other vocation.

THE VOCATION OF HOMEMAKING

The most vital factor affecting the vocational stability of women is, of course, that of marriage. A total of 427 women, or 43 per cent of the group left gainful employment for homemaking. Study of the marriage ratio of all the Oberlin alumnae shows that ultimately 60 per cent of them marry. This ratio has been constant since 1900. The same proportion of the alumnae of Vassar, Wellesley, and Smith marry. It may be expected, therefore, that 15 per cent more of the subjects of this study will marry. Half of them married within three and a quarter years after graduation; two-thirds of them within five and a quarter years.

If one bear in mind the fact that the reliability of averages is proportioned to the square root of the number of cases, it may be safe to note the rank order in the marriage records of the various groups. The vocation with

the best record, *i.e.*, the strongest holding power in the competition with homemaking, is library work. The others follow in this order: (2) the miscellaneous group,—artists, missionaries, nurses, physicians, etc.; (3) secretarial workers; (4) high school teachers; (5) physical educators; (6) college teachers; (7) business women; (8) Y. W. C. A. secretaries; (9) social workers; (10) other educational workers. The average number of years it took the group of 553 women who have not married to become allocated in the field of their final choice was 1.4. For two-thirds of them there was no loss of time in entering the vocation in which they have persisted.

WOMEN AND SCHOOL TEACHING

The field into which they slip with the least loss of time is, as everyone knows, public school teaching. Oberlin has given a special certificate to those majoring in physical education. This field is more highly professionalized than the other phases of education which the graduates of the College of Arts and Sciences enter. Most all of those who have made physical education their profession have secured positions immediately after graduation. The same is true of 85 per cent of those who have remained in high school teaching. The women who have become finally placed in other fields than high school teaching or physical education, have spent a minimum of 1.59 years in some other work first. The business women have, on the average, spent four and a half years in other fields before making their final choice. Usually, however, these four years have been spent in but one or two positions. These years were apparently not spent in aimless wandering from job to job.

COMPARISON OF VOCATIONS

If comparison is made between the *relative holding power* of the different vocations, after the homemakers are subtracted, physical education and high school teaching are found to rank high. Physical education stands first with an 85 per cent record. The other vocations follow in this order: library work, 82.4 per cent; high school teaching, 74.24 per cent; miscellaneous occupations (artists, missionaries, nurses, physicians, etc.) 65.8 per cent; Y. W. C. A., 50 per cent; social work, 40.91 per cent; business, 38.9 per cent; secretarial work, 38.5 per cent; college teaching, 31.82 per cent; and other educational work, 27.28 per cent. The low percentages for these last two groups are due to transfers to other educational work.

The *character of the transfers* from one vocation to another is interesting. It was noted above that of those in high school work, only 15 per cent have transferred from other fields. Three-fifths of these transfers are from other types of educational work. This explains in part why the college education group shows a poor record for persistence. Those who entered immediately upon graduate work and were holding assistantships were classified with the college teachers. A considerable proportion of them, upon receiving their master's degree, accepted high school positions. They were, however, counted as transfers from college teaching. On the other hand, less than 8 per cent of those who

TABLE 5

Oberlin women 1914–22, tabulated according to first occupation

OCCUPATION	TOTAL NUMBER	NUMBER PERMANENT	NUMBER HOME MAKERS UNEMPLOYED	NUMBER HOME MAKERS EMPLOYED	NUMBER IN SIMILAR LINE	NUMBER IN OTHER LINES	PER CENT MARRIED	YEARS IN ORIGINAL OCCUPATION		YEARS BEFORE MARRIAGE	
								Mean	Sigma	Mean	Sigma
Business	37	7	19		2	9	51.36	2.33	1.47	3.90	2.34
Education	702	267	282	14	71	68	42.17	3.15	2.14	3.41	2.05
College Teaching	40	7	16	2	5	10	45.00	2.21	1.49	2.95	1.84
High School Teaching	415	196	142	9	38	30	36.40	3.28	2.16	3.52	2.18
Physical Education	94	46	39	1	3	5	42.60	3.38	1.92	3.65	1.96
Other Educational Work	153	18	85	2	25	23	56.90	3.13	2.27	3.08	2.04
Homemaking	59		59				100.00				
Secretarial Work	39	10	13	0	3	13	28.21	2.17	3.00	3.16	1.34
Library Work	22	14	5	0	0	3	23.81	2.63	1.22	4.40	1.35
Social Work	50	9	26	2	3	10	56.00	2.04	1.44	3.36	2.13
Y. W. C. A.	21	5	10	1	2	3	52.40	2.06	1.55	2.73	1.35
All Others	52	25	13	1	1	12	26.93	2.63	1.75	3.36	2.13
Total	982	337	427	18	82	118	45.33	2.98	2.06	3.37	2.02

TABLE 6

Oberlin women, 1914–1922, tabulated according to final occupation

OCCUPATION	NUMBER	YEARS BEFORE ENTERING		OCCUPATIONS BEFORE ENTERING		JOBS BEFORE ENTERING	
		Average	Sigma	Average	Sigma	Average	Sigma
Business	21	4.47	3.62	1.52	1.2	1.61	1.39
Education	352	0.9	2.1	0.4	0.93	0.4	0.99
College Work	52	1.77	3.2	0.94	1.33	1.05	1.34
High School Work	244	0.56	1.55	0.22	0.81	0.29	0.82
Physical Education	37	0.22	1.02	0.06	0.32	0.06	0.32
Other Educational Work	19	3.63	3.29	1.11	0.97	1.32	1.22
Library Work	22	2.59	1.41	0.95	1.42	1.07	1.41
Missionary Work	17	1.77	2.69	0.71	0.89	0.83	1.04
Nursing	21	1.95	2.29	0.95	0.84	1.19	1.36
Secretarial Work	29	1.59	2.25	0.48	0.86	0.62	0.93
Social Work	39	1.64	2.14	0.67	0.76	0.77	0.97
Y. W. C. A.	12	2.33	2.70	1.0	0.92	1.59	1.1
All Others	40	2.2	3.08	0.85	1.17	0.95	1.17
Homemakers (and 20 others listed above)	427	3.37	2.02				
Total Others	555	1.4	2.5	0.57	0.98	0.63	1.06
Grand Total	982						

started in high school teaching have left educational work for any vocation other than homemaking.

The data reported under the caption, *Years in Original Occupation* in table 5, were computed for all who changed vocation, including the homemakers. These data harmonize with those reported above concerning the holding power of the different vocations. Social work, the Y. W. C. A., business and secretarial positions (the term referring to subordinate rather than to executive positions) are at the foot of the list. Those who deserted these fields for others stayed in them but two years or so, on the average, whereas those who deserted physical education or high school work remained in the field a year longer. In the case of the Y. W. C. A. secretaries, this record may be due to the relatively large marriage ratio, and the relatively short time between graduation and marriage. Moreover, the proportion of social workers who married is unusually large. On the other hand, those who have exchanged business for homemaking delayed matrimony 3.9 years, and only 28 per cent of the secretaries have married. In the latter two vocations, therefore, matrimony does not seem to be the factor explaining their relatively low holding power.

SUMMARY

The following are some of the most significant generalizations to be drawn from this investigation.

(1) The average time which was required by these college men and women to find the occupation into which they have finally settled is less than a year and a half.

(2) Half of the men, and two-thirds of the women (361 of the 555) who have not married, have remained in the vocation first chosen.

(3) Those who have changed vocations have, on the average, stayed in the field of their second choice. One-sixth of this group experimented with at least three preliminary occupations. Practically no difference is found between the sexes in this respect.

(4) Some of those who tried more than one vocation,—14 per cent of the men,—returned to the field of their first choice.

(5) Changes of vocation have apparently not been made without a thorough trial (somewhat more than two years on the average) of the field first chosen.

(6) At the time of this summary, only 45 per cent of the women had married. Other evidence indicates that ultimately this figure will be 60 per cent.[1] Marriages in this group have taken place, on the average, three and a third years after graduation.

(7) In the case of men and women alike, the choice of the specific field for a career in business has been made only after a relatively large number of preliminary experiments.

(8) The occupations which have more than a 75 per cent holding power have been law, medicine, merchandizing, college teaching, physical education, and banking. The corresponding fields for the women have been

[1] L. D. Hartson, *Marriage Statistics for Oberlin Alumnae*, Journal of Heredity, May, 1928, Vol. XIX, pp. 225–228.

physical education, library work and high school teaching (74 per cent).

(9) Of considerable interest for the study of motives and attitudes is the fact that there has been relatively little transfer from one to another quite different type of activity. Only one-seventh of the men who started in business have left business for professional work of any sort, and less than one-fifth of the men who started as high school teachers have transferred to business. One is tempted to conclude that, at the time of graduation, Oberlin men, at least, have made a final decision as to whether or not they will enter business.

Such studies as this help to clear the way for a more fundamental analysis of the attitudes, interests and abilities which determine one's vocational choice. As one step in this direction, a summary has been made of the intelligence test scores and the scholastic records of a number of occupational groups, which is reported in a subsequent article.

(Manuscript received March 22, 1928.)

Effect of Rest Periods on Production

By George H. Shepard, *School of Mechanical Engineering, Purdue University*

Professor Shepard's findings, based on laboratory experiments, corroborate the results of other research workers as well as the practical experience of leaders of men,—that on light-heavy muscular work, one-sixth of the time should be devoted to rest. Here is a technopsychological finding which put into practice is worth much to far-sighted employers as well as to workers.

The effect of rest periods on fatigue in light-heavy muscular work was tested in the laboratory by having students work at a gymnasium chest-weight machine under controlled conditions.

The results indicate that a worker on light-heavy muscular work and on an eight-hour day, cannot give his maximum output unless he rests at least 16.66 per cent of the time during working hours.

There were some indications that it is best to increase the proportionate sizes of rest periods as the day advances and fatigue accumulates.

The subjects of this study, who were students and of superior intelligence, were able, after a little instruction and experience, to select work and rest periods for themselves almost as well as anyone who made tests on them.

A STUDY recently made by the New York Chapter of the Society of Industrial Engineers, under the direction of Mr. J. A. Joffe, shows the prevalence in American industry of a working day approximating eight hours, with a half day on Saturday and very little work on Sunday. This is a great change from the early days of factory industry, with their very long working day, sometimes as long as sixteen hours, and a full day on Saturday.

In coming to the eight-hour working day, industry has been following the path indicated by experiments beginning thirty-four years ago. Prominent among these are the cases of the Salford Iron Works at Manchester, England; the Engis Chemical Works, near Liège, Belgium; and the Zeiss Optical Works at Jena, Germany; and the very exact measurements made by Vernon under the British Health of Munitions Workers' Committee. After citing these and other determinations, Dr. Frederic S. Lee says in his Human Machine and Industrial Efficiency: "Operations differ greatly. One is treading on dangerous ground if he attempts to predict an optimum working day without an analysis of the work itself. The fact is unmistakable, however, that the most reliable evidence at present points toward an approxima-

tion of the eight hour working day as affording for a considerable variety of occupations and for conscientious workers the best condition for high productivity." The present working day is generally accepted as giving greater production than the old working day with its long hours.

The question arises whether, even with the present length of working day, production can be increased by the judicious use of rest periods during working hours.

At Purdue University some tests have been made of which the principal object was to determine the minimum proportion of rest periods to total working hours on which workers on light-heavy muscular work can approximate their maximum output. Light-heavy muscular work is defined as work in which the muscular system is continually under load during the operation, the load not being heavy enough to produce a sensation of muscular strain, but repeated so many times that the worker becomes sensibly fatigued by the end of the day's work.

The early results of these tests have already been published in *Industrial Management;* and in that magazine for November, 1921, the tests are described in fuller detail than would be of interest here.

Individuals and industrial conditions vary so much that it is obviously impossible to obtain a general result as to the proportion of rest periods to total working hours, which will give maximum output; but we believe it to be possible to obtain a minimum proportion of rest time to total working hours. Such a proportion would be the least on which industrial workers could produce their maximum output; that is, any diminution of rest below this proportion would certainly result in a decrease of output. Such a minimum, applied to a concrete industrial situation, would give the manager a starting point in the installation of rest periods, from which he would expect gradually to increase the amount of rest, until he found that amount which would give the maximum output under his conditions. It is desirable, if rest periods are introduced, to use a minimum figure at first, in order that the management may not be obliged later to shorten or withdraw them.

The reasons why the Purdue tests are believed to give a minimum figure for light-heavy muscular work are as follows.

Our workers were all young men of superior physique and in vigorous health, so that they would be expected to have more endurance than the ordinary industrial worker.

During the rest periods, with few exceptions, the workers were required to lie down and relax completely and the observers covered them with blankets enough to keep them comfortably warm. Such complete use of rest periods is rarely even approximated in industry.

The tests were made under favorable conditions as to temperature, humidity and quiet; at least conditions more favorable than commonly occur in industry.

With one exception an all day run was made only once a week, and during the intervals our workers, who were all students of Purdue University, led

the usual lives of athletic students with special attention to rest for at least nineteen hours immediately preceding each run, so that they would not be expected to show the cumulative fatigue of industrial workers.

Our workers were required to pass a physical examination by a doctor before they were accepted. Occasionally a worker was obliged to interrupt the series of runs for a time because of minor illness or athletic injury; and, in every case, he was required to pass another physical examination before he resumed work.

As a convenient example of light-heavy muscular work, we have in all cases used lifting weights on a gymnasium chest-weight machine.

In order that the results might be determined by general fatigue of the whole body and not by that of some particular muscle, the operator was required to raise and lower the weights by walking from and toward the machine, facing it and raising his arms before him as he approached, until the weights struck the bottom stops, and throwing his arms behind him as he walked away, until the weights struck the top stops.

When the operators were working on the test runs, they were paid a bonus, similar to the Emerson efficiency bonus, in addition to their time rates. This was done in order to approximate industrial conditions and in order that the operators might be incited to do their best. Our operators were all dependent, at least in part, on work for their support while attending the university; and the bonus was a material consideration with them. It was necessary to the validity of the results that the operators should always deliver the biggest day's work of which they were capable.

PERFORMANCE OF VARIOUS OPERATORS

The summarized statement of the performance of the various operators is as follows.

OPERATOR NO. 1

First Set of Runs

Year: 1921.

Name: O. J. Broughton.

Weight during test runs: From 138 to 127½ pounds.

Remarks: Athlete in training, runner-up wrestler of Purdue University in the one hundred and twenty-four pound class. University physician, in preliminary physical examination on February 3, found Broughton "in excellent physical condition."

DATE	(WORK TIME) + (REST TIME) = NET OPERATING TIME (HOURS AND DECIMALS)	WORK PERIOD (MINUTES)	REST PERIOD (MINUTES)	AVERAGE FOOT-POUNDS OF WORK AT HANDLES OF THE MACHINE PER HOUR	REMARKS
Feb. 26, 1921	8.83	40	8	97,600	
Mar. 5, 1921	8.60	35	8	98,237	
Mar. 12, 1921	8.22	30	8	96,880	
Mar. 26, 1921	8.25	25	8	88,232	
Apr. 2, 1921 / Apr. 9, 1921	7.95	45	8	98,712	A
Apr. 16, 1921	8.70	50	8	96,600	
Apr. 23, 1921	8.40	55	8	95,730	
Apr. 30, 1921	7.93	60	8	94,823	

Remarks:

A. Five work and rest periods were run on the forenoon of April 2, and five dur-

ing the forenoon of April 9. The results were averaged and taken as one forenoon and combined with four periods on the afternoon of April 9, to make one day's work.

OPERATOR No. 1

Second set of runs

Year: 1921–22.
Name: O. J. Broughton.
Weight during test runs: From 138.75 to 130 pounds.
Remarks: Athlete in training, member of the Varsity wrestling team.

DATE	NET OPERATING TIME (HOURS AND DECIMALS)	WORK PERIOD (MINUTES)	REST PERIOD (MINUTES)	AVERAGE FOOT-POUNDS OF WORK AT HANDLES OF THE MACHINE PER HOUR	REMARKS
Nov. 13, 1921	8.000	40	8	98,600	A
Nov. 20, 1921	8.330	40	10	102,000	B
Nov. 27, 1921	8.016	40	12	98,650	C
Dec. 4, 1921	8.100	40	14	98,800	
Dec. 11, 1921	8.000	40	16	93,050	
Mar. 5, 1922	8.000	40	8	108,100	D
Mar. 19, 1922	8.000	40	7	99,600	E

Remarks:

A. Operator out of bed at fire from 1 a.m. to 2 a.m. night before. This run is thrown out.

B. At end of run operator was feeling good and said he was able to keep on.

C. Operator reported himself very tired at end. Had wrestled from 2:15 to 3:30 the afternoon before, in violation of instructions.

D. Operator very tired at end.

E. Operator very tired and pale at end

OPERATOR No. 2

Year: 1921–22.
Name: H. A. McCord.
Weight during test runs: From 169½ to 163½ pounds.
Remarks: Muscles hard. Getting plenty of exercise, but not in athletic training.

DATE	NET OPERATING TIME (HOURS AND DECIMALS)	WORK PERIOD (MINUTES)	REST PERIOD (MINUTES)	AVERAGE FOOT-POUNDS OF WORK AT HANDLES OF THE MACHINE PER HOUR	REMARKS
Dec. 3, 1921	7.25	25.00	10.00	127,465	A
Dec. 10, 1921	8.00	30.00	10.00	140,478	B
Jan. 7, 1922	8.08	33.64	10.45	140,810	C
Jan. 14, 1922	8.00	40.00	10.00	146,542	D
Feb. 11, 1922	8.00	45.00	10.00	140,626	E
Mar. 4, 1922	8.00	50.00	10.00	136,102	F
Mar. 11, 1922	8.00	55.00	10.00	124,958	G

Remarks:

A. Operator had a slight cold. Complained of cramps in the fingers and fatigue of the shoulders and legs.

B. Operator's shoulders aching and hands cramped at end of run.

C. Work and rest periods were thrown out from intended values of 35 and 10 by accident to machine. Operator reported having a good rest during the Christmas vacation which immediately preceded.

D. At end of the run, operator reported fatigue more severe than on previous runs.

E. This run plots distinctly below McCord's graph in figure 1. He reported extreme fatigue during, and at the end of this run. His pulse was erratic, and toward the end of the run was high and did not return to normal in the ten-minute rest periods. Three days later he came down with a light attack of influenza. On February 28, he was re-examined by the University physician, who reported him "perfectly normal." The doctor attributed the erratic and high pulse on February 11 to "toxemia of the body," probably a premonitory symptom of the influenza which developed three days later. Work was not resumed until March 4.

F. Operator very tired at end of run.

G. At end of run, operator reported extreme fatigue, especially in the legs.

OPERATOR NO. 3

Year: 1922–23.
Name: D. A. Barker. Age 17 years.
Weight during test runs: From 160 to 150¼ pounds.
Height: 5 feet 10.2 inches.
Remarks: These runs were made especially to test the operator's ability to make without guidance an efficient selection of rest and work periods.

DATE	NET OPERATING TIME (HOURS AND DECIMALS)	WORK PERIOD (MINUTES AND HUNDREDTHS)	REST PERIOD (MINUTES AND HUNDREDTHS)	AVERAGE FOOT-POUNDS OF WORK AT HANDLES OF THE MACHINE PER HOUR	REMARKS
Nov. 26, 1922	1.962	17.24	12.19		A
Dec. 3, 1922	8.000	18.00	15.00	104,000	B
Dec. 10, 1922	8.000	17.00	12.00	123,100	C
Dec. 17, 1922	8.000	20.00	14.00	126,300	D
Jan. 7, 1923	8.000	14.00	7.40	138,400	E
Jan. 14, 1923	8.000	27.49	12.62	150,000	F
Jan. 21, 1923	8.167	40.00	9.00	163,000	G
Feb. 4, 1923	8.100	45.00	9.00	160,500	H
Feb. 11, 1923	8.000	55.00	9.00	162,200	I

Remarks:

A. Average of 4, unguided, by the operator. Proportion of rest to (work plus rest) = 41.4 per cent.

B. Operator reported that he was muscularly somewhat soft from previous lack of exercise. Very tired at end of run.

C. Operator slept poorly the night before. Was worried about something.

D. Operator reported himself less fatigued at end than on previous runs.

E. Operator reported that he liked the shorter work and rest periods better than the longer ones, and that he was not as tired as usual at the finish.

F. Average of 12 natural selections by the operator. Operator reported himself more fatigued at the end than on the two runs previous.

G. Operator very tired at end of run.

H. Operator had a slight cold. Reported himself as less tired at the end than on the last previous run.

I. At end operator reported himself as unusually tired and complained of soreness in his shoulders. After this run, the operator caught a bad cold and was obliged to discontinue the tests, so that smaller proportions of rest to total time were not tried.

OPERATOR NO. 4

Year: 1923.
Name: J. R. Belt.
Weight during test runs: From 200½ to 193¼ pounds.
Height: 6 feet 2 inches.
Remarks: Muscular build, chest expansion 5 inches. Belt was a freshman in Civil Engineering. He was on the freshman Varsity team in football and wrestling. These runs were made especially to test the operator's ability to make, without guidance, an efficient selection of rest and work periods.

DATE	NET OPERATING TIME (HOURS AND DECIMALS)	WORK PERIOD (MINUTES AND DECIMALS)	REST PERIOD (MINUTES AND DECIMALS)	AVERAGE FOOT-POUNDS OF WORK AT HANDLES OF THE MACHINE PER HOUR	REMARKS
Jan. 14, 1923	7.5000	18.0	9.00	128,572	
Jan. 28, 1923	8.1167	12.0	6.00	133,141	
Feb. 11, 1923	8.3830	32.0	10.00	134,024	
Feb. 18, 1923	7.9330	23.0	5.00	156,362	
Mar. 4, 1923	8.0000	29.1	7.07	165,196	A
Mar. 11, 1923	7.8330	40.0	7.00	150,178	

Remarks:

A. Operator was allowed to work and rest at will March 4th. See table 8.

OPERATOR No. 5

Year: 1924.

Name: P. W. Thompson.

Weight during test runs: From 154 to 144½ pounds.

Remarks: A physician examined Thompson on March 29th, and reported him "in good physical condition, heart and lungs in splendid condition." Thompson was in constant training for boxing, as he was the Varsity champion in the 145 pound class. Thompson's runs were to test the effect of varying both rest time and work time while maintaining between rest and (rest plus work) the ratio 0.182 indicated by previous tests as likely to give about the maximum output.

DATE	NET OPERATING TIME (HOURS AND DECIMALS)	WORK PERIOD (MINUTES AND DECIMALS)	REST PERIOD (MINUTES AND DECIMALS)	AVERAGE FOOT-POUNDS OF WORK AT HANDLES OF THE MACHINE PER HOUR	REMARKS
Apr. 6, 1924	9.00	38.00	8.50	132,700	A
	9.00	20.00	4.45	125,540	
Apr. 20, 1924	8.24	9.50	2.13	141,870	
May 4, 1924	9.00	4.75	1.06	150,440	
May 11, 1924	9.00	29.00	6.48	150,000	
May 25, 1924	9.00	33.50	7.49	149,300	

Remarks:

A. First run. Operator inexperienced.

OPERATOR No. 6

Year: 1925.

Name: V. F. Chapman. Age 19 years.

Weight during test run: From 188¼ to 180 pounds.

Height: 5 feet 8¾ inches.

Remarks: Sophomore in Science. Weighed 195 pounds at physical examination. Physician reported him "well developed." Pulse; at rest 72 beats per minute; after exercise, 75; after one minute's rests 72. Chest expansion 3½ inches. Chapman's runs were to test the effect of varying both rest time and work time while maintaining between rest and (rest plus work) the ratio 0.182 indicated by previous tests as likely to give about the maximum output.

DATE	NET OPERATING TIME (HOURS)	WORK PERIOD (MINUTES AND HUNDREDTHS)	REST PERIOD (MINUTES AND HUNDREDTHS)	AVERAGE FOOT-POUNDS OF WORK AT HANDLES OF THE MACHINE PER HOUR	REMARKS
Mar. 8, 1925	8	40.00	8.50	113,100	A
Mar. 15, 1925	8	57.00	12.75	119,700	B
Mar. 22, 1925	8	76.00	17.00	118,900	C
Mar. 29, 1925	8	98.10	21.90	124,500	D
Apr. 5, 1925	8	87.05	19.45	124,000	E
Apr. 12, 1925	8	92.58	20.68	121,800	
Apr. 19, 1925	8	98.10	21.90	124,400	
Apr. 26, 1925	8	4.48	1.00	129,900	F

Remarks:

A. First test run. Operator new to the job. Operator complained of sore foot. Method was improved slightly after this run. By error, rest was made somewhat less than the standard proportion on this run.

B. Operator bothered by slightly chafed left little toe.

C. Operator complained of soreness in right arm and knee. As compared to 40, 57 and 98.10 minute work periods, the operator reported the 76 minutes work period as the most agreeable.

D. The operator reported these long work periods as very tiring.

E. Operator complained of headache and fatigue of hands. Sleep disturbed previous night.

F. Operator said that the test was very tiresome on account of the short rest periods. No shorter period of rest was tried, because the time taken by the operator in lying down and getting up again would then have become too large a part of the total rest period.

MINIMUM PROPORTION OF REST AT WHICH MAXIMUM OUTPUT MAY BE EXPECTED

The periods of work and rest with which maximum production was obtained in the first five tests are shown in table 1.

In the table of Broughton's 1921 tests (see Operator No. 1, 1921) his output on 40 minutes of work and 8 minutes of rest is less than on two other runs; but reference to figure 1 shows that Broughton's performance on 40 minutes work and eight minutes rest plots below his curve of the 1921 tests.

TABLE 1

Periods of work and rest with which maximum production was obtained

OPERATOR	YEAR	AT MAXIMUM PRODUCTION	
		Work period	Rest period
		minutes and decimals	*minutes and decimals*
Broughton	1921	40.0	8.00
Broughton	1921–2	40.0	8.00
McCord	1921–2	40.0	10.00
Barker	1922–3	40.0	9.00
Belt	1923	29.1	7.07
Total		189.1	42.07

Average proportion of rest time to rest time plus work time = $\frac{42.07}{231.17}$ = 18.2 per cent.

Extreme values are 16⅔ and 20 per cent.

This was the first run of the series, and inexperience may reasonably be supposed to have prevented the operator from doing as much as he was able to do later. A smooth curve through his field rises at 40 minutes work and eight minutes rest (point C of the curve) to about its highest point.

The minimum proportion of rest time to (rest time plus work time) at which maximum output was obtained in our tests was therefore 16⅔ per cent.

Our results, therefore, indicate that a worker on light-heavy muscular work and an eight-hour day, cannot give his maximum output unless he rests at least 16⅔ per cent of the time during working hours.

This percentage is practically the same as the practice of the U. S. Army in marching infantry, which as provided by the Field Regulations, is as follows:

To march 45 minutes; halt, adjust packs and so forth, and rest 15 minutes.

Thereafter to march 50 minutes and rest 10 minutes.

A halt of one hour is advised about noon, for rest and food.

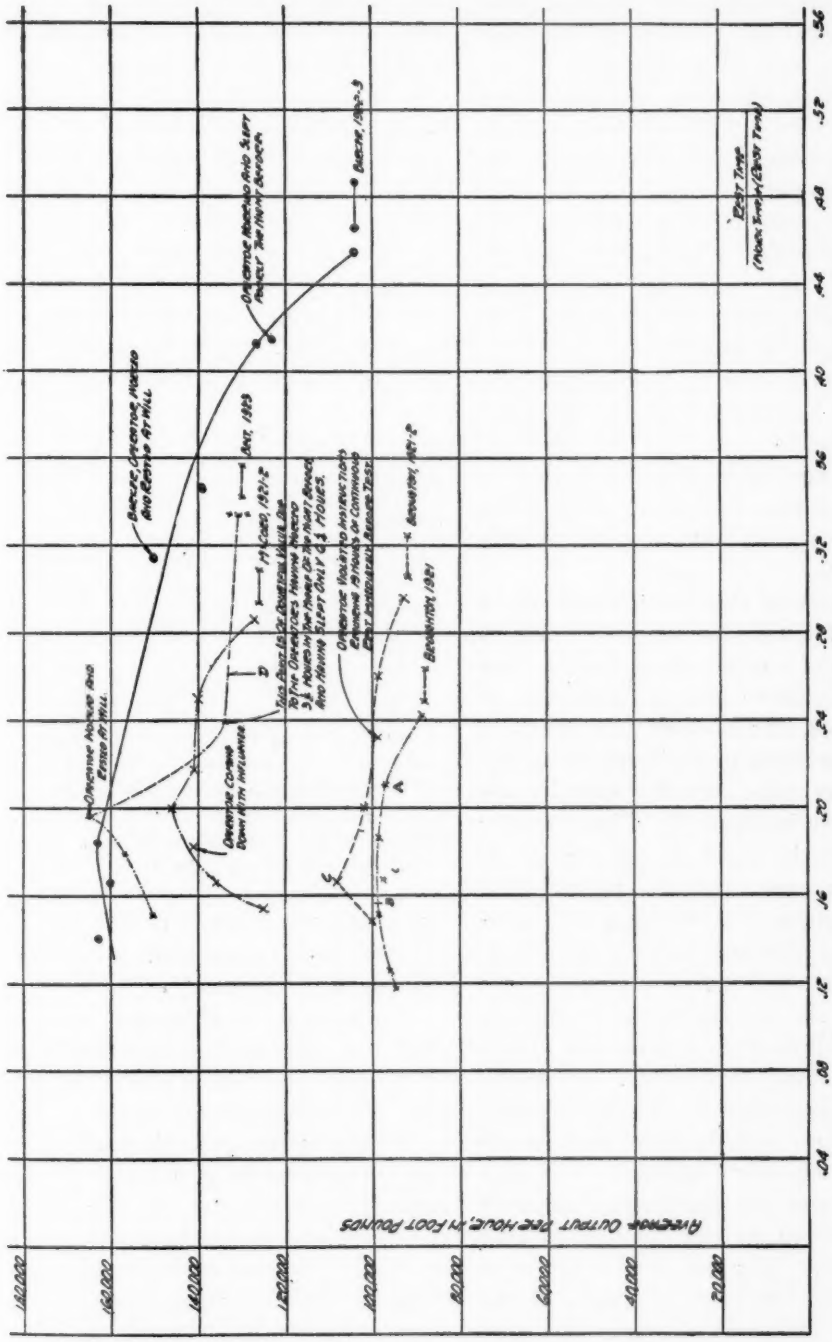
Seasoned infantry is expected to march on this regimen for six days per week for as long as may be necessary.

As far as we have been able to learn, the U. S. Army arrived at the above regimen by a gradual evolutionary process through general experience, and not by any precise tests.

As with our own results, the Army's practice would be expected to be a minimum percentage of rest to work for an industrial worker, for the following reasons:

The men are selected by strict physical examination and are kept in condition amounting to mild athletic training.

They are encouraged to lie down


AVERAGE OUTPUT PER HOUR, IN FOOT POUNDS
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
.04
.08
.12
.16
.20
.24
.28
.32
.36
.40
.44
.48
.52
.56
REST TIME (HOUR SPACES EQUAL FIVE MINUTES)
BUCKINGHAM, 1921-2
BUCKINGHAM, 1921
OCT. 1923
NOV. 1923
DEC. 1923
JAN. 1924
FEB. 1924
MAR. 1924
APR. 1924
MAY. 1924
JUNE, 1924
JULY, 1924
AUG. 1924
SEPT. 1924
OCT. 1924
NOV. 1924
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JAN. 1925
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MAR. 1925
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JULY, 1925
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NOV. 1925
DEC. 1925
JAN. 1926
FEB. 1926
MAR. 1926
APR. 1926
MAY. 1926
JUNE, 1926
JULY, 1926
AUG. 1926
SEPT. 1926
OCT.

during the rest periods; and the total marching time per day is only six hours.

Another example of light-heavy muscular work is filing metal by hand. For filing brass with a half-round file, 35 centimeters in length, Amar, after carefully standardizing conditions and methods finds, "With these conditions fulfilled, the operation should continue five minutes and be followed by one minute of complete rest. Under these conditions the maximum work is at least twice that of most workmen."

Here again the ratio of rest time to rest time plus work time is our minimum for maximum output, or 16⅔ per cent.

In three of the five tests shown in figure 1 maximum output occurs at the top of a rather sharp peak. This fact indicates that, in three out of five cases, our workers were sensitive to a variation of their rest from the optimum ratio. Similar sensitiveness is shown in figure 2. These results indicate the need of caution in increasing rest periods beyond the minimum, since by so doing the manager may diminish output, and shortening the rest period once set is subject to the inevitable embarrassment and difficulty attending the withdrawal of any privilege once extended.

On the other hand, the possible need of more rest, if the workers are not of superior physique, or if conditions are not thoroughly adapted, is indicated by the two cases next following. The first of these is quoted from the last annual report of the British Industrial Fatigue Research Committee.

"Muscular Work.—The effect of rest pauses of different lengths in muscular work have been studied under laboratory conditions by Vernon using a special dynamometer against which the subjects exerted pulls of maximal effort. The results for one subject are summarized in table 2 and in figure 2, which show that the strength of pull increased approximately in proportion to the length of the rest period, whilst the total work done over a given period reached its maximum when work periods of 24 seconds were alternated with rest periods of 8 seconds."

TABLE 2

Effects of rest pauses on muscular effort

(Rhythm C. R. = 1/2/1 second)*

WORK PERIOD	REST PERIOD	STRENGTH OF PULL	WORK DONE PER 3½ MINUTES
seconds	*seconds*		
24	None	106	14,840
24	4	130	15,600
24	8	153	16,065
24	16	180	15,120
24	24	199	13,930

* The actual pull lasted for half a second and was followed by an interval of one second before the next pull was begun.

Table 2 is graphed in figure 2.

The account in Gilbreths' Fatigue Study of girls folding handkerchiefs shows that they rested about 21 per cent of the total working time.

"At the end of the day's work under these conditions the girls accomplished more than three times the amount of their previous best work, with a greater amount of interest and with no more fatigue. The operators had not seemed over-fatigued at the start."

Reasons for the greater amount of

rest required by the girls are, their less robust physique, and less relaxation during rest periods, as at most they only sat idly in their work chairs.

Other things being equal, one would expect this type of work to require less rest than that studied by us, because it was very much lighter work and because it was done either sitting or standing, partly according to an established routine and partly at the will of the operator.

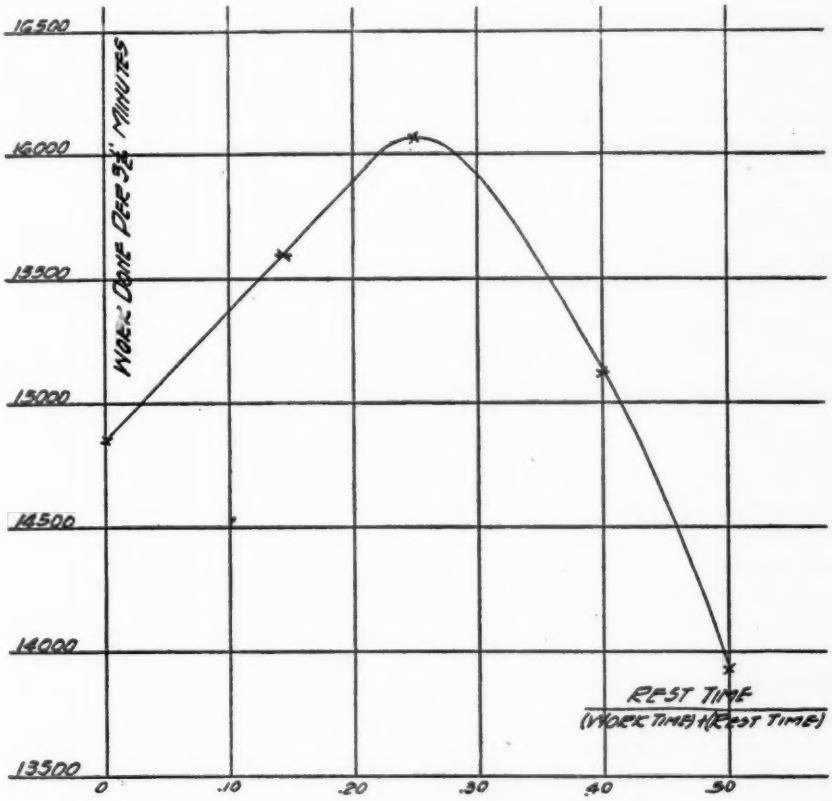

FIG. 2. VERNON'S DYNAMOMETER TEST

REST PERIODS INCREASING DURING THE DAY

With Broughton in 1921 we find some indications that output might be increased by using a smaller proportion of rest to work at the beginning of the day and gradually increasing it; that is by giving the operator less rest when he is fresh and increasing it as he becomes fatigued.

With both Broughton and McCord in 1921–22, we find similar indications. Similar indications were found with Barker.

However, Thompson's graphs of cycles and output at maximum production in 1923–24 and Chapman's in 1924–25 do not indicate any such possibility. The fact that in both these cases the rest period was about one minute and the work period only

4.5 times as much probably has something to do with this. We hope later to investigate this matter more thoroughly.

WORKERS' OWN SELECTIONS OF WORK AND REST TIMES

In several preliminary runs in 1921 Broughton was allowed to work and rest as he wished. His natural and unguided selections of work and rest periods are shown in table 3.

TABLE 3

Natural selections by Broughton (1921) of work and rest periods

WORK			REST		
From	To	Elapsed time	From	To	Elapsed time
p.m.	*p.m.*	*minutes*	*p.m.*	*p.m.*	*minutes*
1.15	1.45	30.0	1.45	1.52	7.0
1.52	2.20	28.0	2.20	2.30	10.0
2.30	3.18	48.0	3.18	3.27½	9.5
3.27½	4.27	59.5	4.27	4.31	4.0
		165.5			30.5

$$\frac{30.5}{196.0} = 0.1555$$

This proportion of rest to (work + rest) plots at B on Broughton's 1921 curve in figure 1, or on the plateau of maximum output. We therefor determined to test other operators along this line, to find whether Broughton's ability to make by his own natural feelings an efficient selection of work and rest periods, was peculiar to him, or is a common human possession.

In 1921–22 in preliminary runs, McCord was allowed to make five natural unguided selections of work and rest periods, with results shown in table 4.

The average of the five gives 34.4 minutes work to 11.8 minutes rest, or rest equal to 25.5 per cent of total time; but it will be noticed that, during the first four trials, McCord was continually decreasing the percentage of rest and that, on the third, fourth and fifth trials, he steadied about a percentage of 21.6, and a rest period of 10⅔ minutes. Therefore, if we had averaged only the runs after the operator had reached a roughly constant selection, we should have obtained 21.6 per cent rest against 20 by our

TABLE 4

Natural selections by McCord (1921–1922) of work and rest periods

WORK			REST		
From	To	Elapsed time	From	To	Elapsed time
a.m.	*a.m.*	*minutes*	*a.m.*	*a.m.*	*minutes*
10.08	10.39	31	10.39	10.58	19
10.58	11.23	25	11.23	11.31	8
p.m.	*p.m.*		*p.m.*	*p.m.*	
2.09	2.45	36	2.45	2.56	11
2.56	3.41	45	3.41	3.52	11
3.52	4.27	35	4.27	4.37	10

series of tests. Moreover, we made an eight-hour run with the percentage of rest to (work plus rest) at 25 per cent. The output on this was very nearly 96 per cent of the best result obtained.

With Barker in 1922–23, a test was made especially to investigate his ability to select, by his own natural feelings and without other guidance, efficient periods of work and rest. His selections are shown in table 5.

Barker then made test runs under our guidance, with

$$\frac{\text{rest time}}{(\text{rest time}) + (\text{work time})}$$

controlled to the following percentages;

41.2, 41.4, 45.5, 34.55. With 41.4 per cent of rest (17 minutes work and 12 minutes rest) the output was only 75.6 per cent of the maximum later obtained under guidance. This point, however, due to some mental disturbance of the operator, plots distinctly below his graph in figure 1. The point on a whole day's run, with the results shown in table 6.

With Belt in 1923 a test was made especially to investigate his ability to select, by his own natural feelings, and without other guidance, efficient periods of work and rest. His selections are shown in table 7.

TABLE 5

Natural selections by Barker (1922–1923) of work and rest periods before experience on runs under guidance

WORK			REST		
From	To	Elapsed time	From	To	Elapsed time
a. m.	a. m.	*minutes and decimals*	a. m.	a. m.	*minutes and decimals*
10. h. 32.115 m.	10. h. 45.64 m.	13.525	10. h. 45.64 m.	10. h. 52.77 m.	7.130
10. h. 52.77 m.	11. h. 10.425 m.	17.675	11. h. 10.425 m.	11. h. 25.21 m.	14.785
11. h. 25.2 m.	11. h. 45.73 m.	20.520	11. h. 45.73 m.		
p. m.	p. m.		p. m.	p. m. 12. h. 00.27 m.	14.540
12. h. 00.27 m.	12. h. 17.47 m.	17.240	12. h. 17.47 m.	12. h. 29.84 m.	12.370
		68.960			48.825

$$\text{Average of } \frac{\text{Rest time}}{(\text{Work time}) + (\text{rest time})} = 41.4 \text{ per cent}$$

Barker's smooth curve, at 41.4 per cent of rest gives an output of 77.3 per cent of the maximum.

To see what effect, if any, Barker's experience on four runs under guidance would have on his selection, he was then allowed to select his own periods of work and rest throughout

Belt then made test runs under guidance with

$$\frac{\text{rest time}}{(\text{rest time}) + (\text{work time})}$$

controlled to the following percentages, one at 23.8 and two at 33.3.

To see what effect, if any, Belt's ex-

perience on three runs under guidance would have on his selection, he was then allowed to select his own periods of work and rest, throughout a whole day's run, with the results shown in table 8.

Since we can not establish a limiting condition, a very large number of cases is necessary for reliable generalization; and these data are therefore offered merely for what they are worth.

On the face of the returns, two of our operators, in selecting work and rest periods entirely by their natural feelings and with no other guidance whatever, missed the correct proportion of rest very badly, but after a little experience and instruction, the poorest selection made by the unguided operator gave 92 per cent of maximum output.

On the other hand, if we had set the proportion of rest to (work plus rest) at $16\frac{2}{3}$ per cent, which we have accepted as the minimum of rest for maximum output, Belt and McCord, according to their graphs in figure 1, would have produced only about 93 per cent of their maxima. If we had set the proportion at 18.2, the average for maximum output of the five tests to determine this, Belt would have

TABLE 6

Natural selections by Barker (1922–1923) of work and rest periods after experience on four runs under guidance

WORK			REST		
From	To	Elapsed time	From	To	Elapsed time
a. m.	*a. m.*	*minutes and decimals*	*a. m.*	*a. m.*	*minutes and decimals*
9:13	9:42	29.00	9:42	10:06	24.00
10:06	10:43.25	37.25	10:43.25	10:58.50	15.25
10:58.50	11:36.95	38.45	11:36.95	11:51.45	14.50
11:51.45	12:30.50	39.05	12:30.50	12:43.50	13.00
Lunch hour					
p. m.	*p. m.*		*p. m.*	*p. m.*	
1:42.25	2:21.25	39.0	2:21.25	2:40.75	19.50
2:40.75	3:00.15	19.4	3:00.15	3.08.10	7.95
3:08.10	3:88.8	20.7	3:28.8	3:36.8	8.00
3:36.8	3:56.7	19.9	3:56.7	4:05.7	9.00
4:05.7	4:24.2	18.5	4:24.2	4:33.7	9.50
4:33.7	4:53.8	20.1	4:53.8	5:03	9.20
5:03	5:23.6	20.6	5:23.6	5:36.1	12.50
5:36.1	6:04	27.9	6:04	6:13	9.00
		329.85			151.40

$$\frac{\text{Rest time}}{(\text{Work time}) + (\text{Rest time})} = 31.4 \text{ per cent}$$

The resulting point is indicated on Barker's graph in figure 1 and shows 92 per cent of his maximum output.

produced only about 94.5 per cent of his maximum.

Therefore, as for our four operators, they were able, at least after a little instruction and experience, to select work and rest periods for themselves almost as well as we could have selected them, unless we had made a series of individual tests on each man.

We intend to try this out further with more operators as soon as possible, because, if industrial workers can easily and quickly be taught to work and rest under the guidance of their own feelings, practically as efficiently as an industrial engineer can guide them on the basis of test data, that fact is important and valuable. It will be sufficient to interest workers thoroughly in production, probably by efficiency reward, teach them to try out for themselves the point at which they earn the most, and then leave them (except where conditions require all to work and rest together) to work and rest at will.

However, the investigation of this question by the methods thus far open to us will take a great deal of time; and any data from other investigations

TABLE 7

Natural selections by Belt (1923) of work and rest periods before experience on runs under guidance

WORK	REST	WORK PLUS REST	$\frac{\text{REST}}{(\text{WORK})+(\text{REST})}$
minutes and decimals	*minutes and decimals*	*minutes and decimals*	*minutes and decimals*
15.9	8.3	24.2	0.343
12.2	6.3	18.5	0.34
31.5	9.6	51.1	0.1875
22.9	5.1	28.0	0.182
17.8	9.3	27.1	0.342
	38.6 (total)	148.9 (mean)	0.259

$$\text{Average of } \frac{\text{Rest time}}{(\text{Work time}) + (\text{Rest time})} = 25.9 \text{ per cent}$$

The corresponding point on Belt's graph is *D*, showing only 81 per cent of his maximum output. (See figure 1.)

TABLE 8

Natural selections by Belt (1923) of work and rest periods after experience on runs under guidance

	WORK			REST		
Number	From	To	Elapsed time	From	To	Elapsed time
	a.m.	*a.m.*	*minutes*	*a.m.*	*a.m.*	*minutes*
1	8:40	9:32	52	9:32	9:35	3
2	9:35	10:03	28	10:03	10:15	12
3	10:15	10:39	24	10:39	10:45	6
4	10:45	11:05	20	11:25	11:10	5
5	11:10	11:49	39	11:49	12:00	11
	p.m.	*p.m.*		*p.m.*	*p.m.*	
6	12:00	12:43	43	12:43	12:50	7
	Lunch hour					
	p.m.	*p.m.*		*p.m.*	*p.m.*	
7	1:55	2:55	60	2:55	3:06	11
8	3:06	3:25	19	3:25	3:30	5
9	3:30	3:41	11	3:41	3:45	4
10	3:45	4:17	32	4:17	4:30	13
11	4:30	4:57	27	4:57	5:05	8
12	5:05	5:16	11	5:16	5:20	4
13	5:20	5:32	12	5:32	5:35	3
Total			378			92

$$\frac{\text{Rest time}}{(\text{Work time}) + (\text{Rest Time})} = 19.55 \text{ per cent}$$

The resulting point is indicated on Belt's graph in figure 1 and is that of maximum output.

or from industry which will throw light on the question will be very greatly appreciated.

For example, Vernon[1] has made a study of the rest pauses voluntarily taken by men working on tin-plate manufacture. Two kinds of shifts were observed, six-hour shifts and eight-hour shifts. The average rest was 10.2 minutes per hour for the six-hour shifts and 12.5 minutes per hour the eight-hour shifts. Assuming a uniform rate of work, the men would have produced 5.1 per cent more hourly output in the six-hour shift than in the eight-hour. Actually,

TABLE 9
Vernon's Data

LENGTH OF SHIFT	WORK PLUS REST	REST	$\frac{\text{REST}}{(\text{WORK})+(\text{REST})}$	TOTAL OUTPUT
hours	*minutes*	*minutes*	*per cent*	*per cent*
6	16.7	2.85	17.00	82.5
8	16.4	3.42	20.83	100.0

however, the shorter shift produced 10 per cent more hourly output than the longer. The men on the six-hour shifts took pauses of average duration of 2.85 minutes while pauses of those on the eight-hour shifts averaged 3.42 minutes. "The mill-men, averaging the two systems of shift together, tended to work for about thirteen minutes, rest for three or three and a half minutes, then work for another thirteen minutes, and so on throughout the shift. On three-fourths of all occasions the six-hour men rested one to three minutes, while the eight-hour shift men rested two to four minutes."

Vernon's data are summarized in table 9.

[1] H. M. Vernon. *The influence of hours of work and of ventilation on output in tin-plate manufacture.* Report No. 1 of the British Industrial Fatigue Research Board.

BEST WORK AND REST PERIODS AT OPTIMUM RATIO

At maximum output the average proportion of rest time to work time plus rest time with our first four subjects was 18.2 per cent. We determined to test the effect of varying work time and rest time together while keeping this ratio constant. For this purpose the tests with Thompson and the runs with Chapman plotted in figure 3, were made.

Since we have not been able here to establish any limiting condition, a very large number of cases will be necessary to warrant a generalization. These two cases are therefore offered merely for what they are worth.

On the face of the records it appears that both Thompson and Chapman did somewhat more work per hour with a rest period of about one minute than they did with any longer one. It seems very possible that with work of this character, entirely muscular and unskilled, in which the operator does not have to spend any time in organizing his efforts either at the beginning or end of work, he may produce the most by working intensely for a very short time and then resting for a time correspondingly short. The appearance of maximum efficiency for these very short work and rest periods is strength-

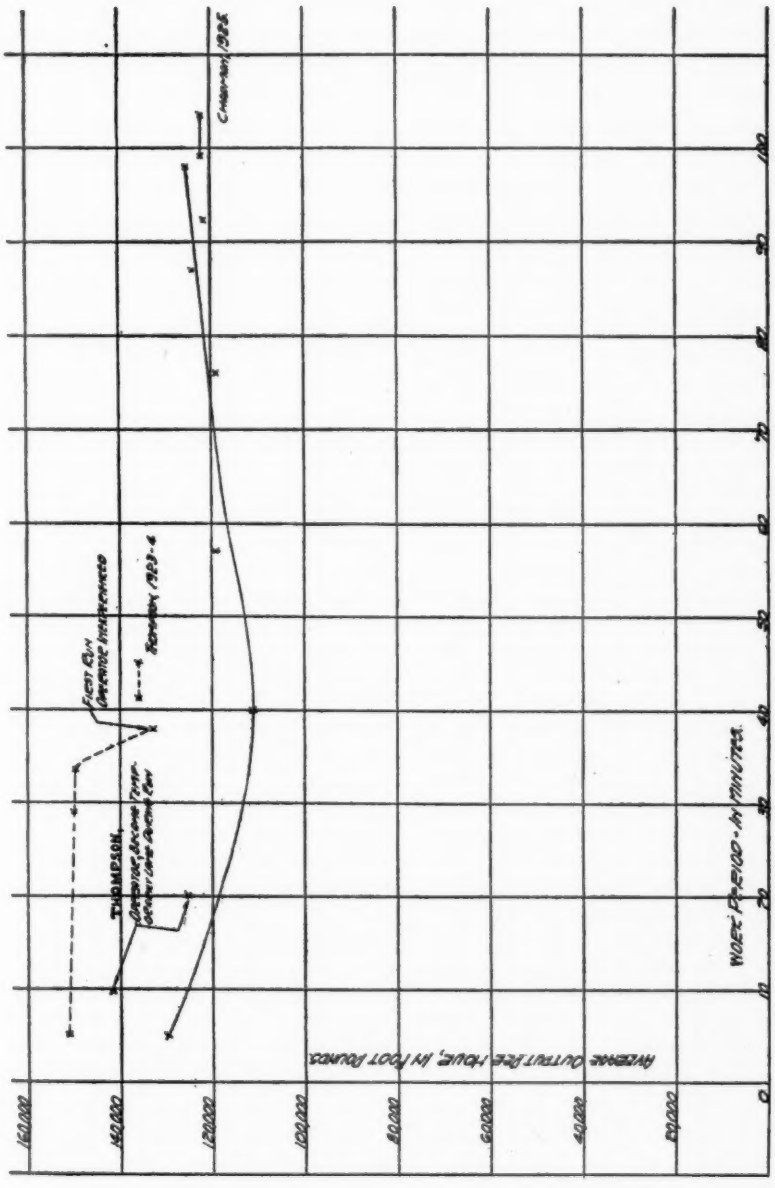

FIG. 3. EFFECT OF VARYING WORK PERIOD, WHILE MAINTAINING MOST EFFICIENT RATIO OF REST TIME TO WORK TIME

ened by the fact that the output per unit of time was sustained in them to the very end of the day, while in every other case of maximum production it fell off markedly in the last few periods.[2] When Nature desires long sustained and undiminished performance on work of this kind, she arranges work and rest periods in this fashion, as in the case of the beating of the heart.

However, with the exception of one run by Thompson, low outputs may all be explained by the operators' being somewhat out of condition; and in that case Thompson's lack of previous experience with this work may account for the result. The results with these two men would indicate that with working periods up to 98 minutes the output is not seriously affected by varying work and rest periods, provided the optimum ratio is maintained between them.

(*Manuscript received December 21, 1927*).

[2] Charles W. Manzer. *An Experimental Investigation of Rest Pauses*. Archives of Psychology, No. 90, July, 1927.

"For efficiency in muscular work, short, frequent rest pauses should be introduced early in the period of work before any falling off of either output or "quality" due to the onset of fatigue; and, second, work with tired muscles is extremely wasteful.

"The advantage of short, frequent rest pauses over long, infrequent rests can be shown by comparing, in the light of the present study, two results found by Maggiora. Maggiora found that when a pause of ten seconds was allowed between successive contractions of the finger, the work could be continued indefinitely without fatigue or discomfort. He also found that if the work consisted of ergograms in which the muscle-group was worked to exhaustion, a pause of two hours between every two ergograms was necessary to maintain a constant output throughout the day. Let us compare these two distributions of rest pauses—ten seconds between successive contractions and two hours between successive periods of work.

"If one second be allowed for contracting muscles and another second for relaxing, then five contractions can be made in a minute and three hundred in an hour. If the working day be taken as eight hours, 2,400 contractions can be made in a day. Under the conditions of our study, 2,400 maximal contractions with the finger would equal 360 kilogram-meters of work. Using the second arrangement of rest pauses, four work periods and four rests of two hours each would fill a working day of eight hours. (The four or five minutes of actual working time are neglected.) The average output of our subjects with unfatigued muscles of the finger is 6.57 kilogram-meters. The output for the day would be, therefore, 26.28 kilogram-meters. It will be seen that, using the short, frequent rests, the average of our subjects would do in one day as much work as he would do in fourteen days, using the long, infrequent rests. Not only do the short, frequent rests prevent fatigue and discomfort, they also make possible a notably greater output.

The Problem Employee[1]

His Study and Treatment

By V. V. Anderson, M.D., *R. H. Macy and Company, New York*

The psychiatrist in business is a notable innovation. Although more than a decade has passed since the late Dr. Southard demonstrated to American industry the possibility of solving certain problems of employee behavior by wise application of psychiatric procedures, only recently has a great mercantile house established the value of a psychiatric staff as an integral part of its management. Dr. Anderson's discussion of the problem employee is quite as refreshing as his "Psychiatric Guide to Employment" published in the April Personnel Journal. *It points out the saving that can be made not only in financial terms but in human material as well.*

The mental hygiene point of view in dealing with problem employees is contrasted with the usual commercial attitude. The "Job Misfit"—the problem worker—has been considered a waste product in business and industry. Wherever modern management through improved personnel methods has given much consideration to him it has been in the direction of preventing his employment, or eliminating him when discovered. The tremendous social implications involved in this neglect upon the part of the business world to deal in a constructive way with individual cases of work and personality maladjustments are emphasized. The methods of making a psychiatric study are outlined, including the social history, the job behavior study, the physical examination, and the mental examination. Several problem cases are then described in detail, and analyzed. Some employees were found whose difficulties of personality could be satisfactorily treated without transfer to a new job. Others required occupational readjustment. A few were diagnosed as hopeless at the start; and some were abandoned after a tentative period. From a sample of 1200 employees, about one-fifth were judged by their supervisors to be problem employees. Roughly half of those referred to the psychiatrist have been satisfactorily adjusted and are now assets instead of liabilities to the store and to society.

ABOUT 20 per cent of the employees of mercantile establishments,—and this is probably true of other organizations,—are what may be called "problem" individuals. That is, as personnel risks they are either liabilities or potential liabilities to the business man. It is from this group that are drawn the repeated transfers from job to job, resignations and lay-offs. These are the work failures that in the majority

[1] Address delivered under the auspices of the University of Toronto and the Canadian National Committee for Mental Hygiene, March, 1928.

of cases are a drag on any organization.

MENTAL HYGIENE VS. COMMERCIAL VIEWPOINT

As the employer sees these individuals, they are production problems, or chronic health problems, or attendance problems, or serious attitude problems, or marked disciplinary cases and the like, and from his viewpoint he is better off without them.

As the psychiatrist sees them, they all present distinguishing physical and mental characteristics that underlie and explain not only their job maladjustments, but faulty adjustive efforts and failures in other life situations. In studying the life histories of these individuals, and in analyzing their careers, he is struck with the one outstanding common factor presented in nearly all cases,—a personality makeup that is either unsuited to the job itself, or to the particular department, or to the standards of the organization, or to successful work achievement in general under almost any efficient business conditions.

Of course, such cases can be dumped wholesale into the community to shift for themselves. This might, after all, be a simple and easy way of solving the entire problem, for it is common enough for the management of some business organizations to say, "We are not running a charitable institution. Why should we feel any responsibility in this matter?"

But then, there is another viewpoint, and that is the medical and mental hygiene viewpoint, *i.e.*, that many of these individuals may, through proper study and treatment, be adjusted and become assets to the employer, cutting down turn-over among employees and increasing production efficiency. A few case summaries presented further on demonstrate what can be accomplished in this direction, and, as our statistics show, a sufficiently large number of problem cases improve under psychiatric treatment to make the application of such measures profitable, not only in terms of human salvage, but in terms of dollars and cents.

And then who will say, after all, that business and industry are going to escape the definite social obligations involved in their increasing contribution to that large army of misfits who are bandied about the community from one store to another, or from one industry to another; out of work a large proportion of the time; partly supported by family, or friends, or churches, or social agencies, or institutions, (and furnishing the richest possible soil for the development and growth of delinquency, dependency and mental disease), conditions that become the joint burden and responsibility of the community as a whole; conditions often traceable to factors that on the job render the individual an unsatisfactory employee and lead to resignations and lay-off?

Constructive work here is possible, and results are most gratifying, when one reviews the case records of fairly well adjusted and productive employees who had at one time been a liability to their employers and to their families.

Business responsibility does not lie in the direction of creating facilities for the custodial care of human failures

or for attempted cure of apparently hopeless work maladjustments. But certainly something is to be said in favor of a conscious responsibility on the part of business for the creation of facilities that provide for the early recognition, careful diagnosis, treatment and prevention of factors that later lead to lay-off or to resignation of problem employees and in many instances to the unfortunate social results above mentioned. This is an ideal that guides the psychiatric approach to industry,—an ideal that is eminently practical, that is founded on good business sense as well as on ethical principles. I have been tremendously impressed with the great therapeutic possibilities to be found in a department store, in connection with psychiatric treatment of problem employees.

Experience has taught us that the best sort of scientific staff for dealing with the varied problems found among workers consists of a psychiatrist, a psychologist and a psychiatrically trained social worker,—the same sort of working team that has proved most successful in other fields where the problem has been human behavior. The contributions of these three groups,—the medical, the social and the psychological,—when combined in a well organized unit, form the ideal grouping and the minimum basis for an adequate program of diagnosis and treatment of work maladjustments among employees.

FOUR ASPECTS OF A CASE STUDY

The methods employed in conducting a complete psychiatric study can, for practical purposes, be roughly classified into (a) the social history, (b) the job behavior study, (c) the physical examination, and (d) the mental examination. These four together make up a thoroughgoing picture of the whole individual,—his behavior to his work and to major life situations, as well as those influences,—constitutional, or home, or school, or work,—that have contributed most to his career.

(*a*) *The social history* includes a (1) *health history* (both physical and mental); (2) the *family history*, with particular reference to present family situations and home problems of an economic, health or psychological nature—discontent, friction, unwholesome atmosphere, impaired family relationships, etc.; (3) an *educational history*, including academic training, specialized vocational equipment or considerable job experience—which in itself provides expertness at work; and, finally, (4) the *work history*,—leading the individual to give an account of the nature of his first regular job, his attitude toward the work, the salary he received, the length of time employed at it, his reasons for leaving, the period of idleness before his next job, what its nature was, his mental attitude toward the work, his salary, the length of time he remained employed at it, etc.,—bringing him up to the present time. This may give us a splendid picture of his work adjustments, and always throws light upon his personality make-up.

(*b*) *The job behavior study* conducted by the psychiatric social worker includes a descriptive account of the employee's behavior at work and adjustment to his present job, his

manner towards customers, associates and supervisors, his interest in and concentration on what he is doing, his speed and accuracy at work, his neatness at work, the quality of performance of the task, his selling technique, the impression he makes on others, his initiative, his knowledge of merchandise, his steadiness in keeping at work, evidence of fatigue, and the effect of health problems, or home, attendance, and other problems, on his work and value to the department.

This carefully obtained work adjustment history differs fundamentally from the rating scale method so commonly employed, in that it becomes a descriptive account secured by a skilled, well-trained psychiatric worker, of the actual behavior of the individual at work, rather than the subjective interpretation as to traits and characteristics an employee is judged to possess by an untrained rater. A rating method by means of which wholly untrained people size up an employee, is full of dangerous possibilities from the standpoint of the individual worker, as we shall point out later on.

(*c*) *The physical examination* should be done with more thoroughness than is customary in the case of the average patient in a medical clinic, where the concern of the physician is largely with the history of his present illness, the symptoms of the case, and the actual examination of the organ or organs affected. In the psychiatric study, the physician at once questions the entire organism, not only in terms of actual organic disease, or functional disorder, but in terms of general tissue or organ inferiority, or total constitutional defect, and the well-balanced and proper functioning or impaired functioning of the machine as a whole.

(*d*) *The mental examination* is composed of the intelligence and special ability studies, by means of psychological tests, and of the personality investigation, by means of the psychiatric interview.

The psychological method involves the objective and quantitative evaluation of certain measurable mental qualities. It is of enormous aid to the diagnostician, in that it furnishes him accurate and concrete evidence of the capacities of the individual, and enables him to compare the performance of individuals with each other, and with standards obtained from careful studies of large groups. It is, however, limited in practical application to only a few attributes of the mind, and could never of itself constitute a complete mental examination.

The psychiatric investigation is a more comprehensive method, and assesses the constitution and make-up of the entire personality. It is a clinical and dynamic approach that gives due consideration to the main trends in the mental life of the individual,—the so-called patterns he has established, his habits and ways of doing things, his attitude towards himself, towards others, and towards life situations in general; his interests; his hopes; his mistakes; his defeats; his fears; the conflicts and complexes, and the driving forces, emotional and instinctive, in his nature. All these are carefully evaluated as part of the psychiatric technique. These two aspects of the mental examination are not to be

viewed as opposing methods in the sense that either one alone can give an adequate presentation of the important issues that must be considered in the mental study of a given case. On the contrary, they are to be viewed as two parts of one whole. We should hardly expect the physician to discard his clinical findings in favor of the laboratory tests, or the laboratory tests in favor of the clinical findings. As a matter of fact, in the case of any given patient, they both are essential phases of a careful medical inquiry.

All of the above information, together with the actual hospital record of the individual since his employment, and the store record, is summarized, analyzed, coördinated and interpreted by the psychiatrist, psychologist, and psychiatric social worker. In this report are presented the essential facts in the physical findings and clinical medical history, a brief statement of the mental findings, the job behavior and the social history, with final conclusions and remarks which include recommendations in the way of placement or treatment or disposition of the case.

In psychiatric treatment of problem employees, the main burden of follow-up and contact with the patient is carried by the psychiatric social worker, although the psychiatrist guides the treatment program and maintains occasional personal contact.

A. DIFFICULTIES OF PERSONALITY

Problem cases may be divided into four main groups. *Group A* includes those problem employees whose main difficulties lie in their own make-up and the disorder of their own *personality*, rather than in the fact that they are in the wrong job. A careful psychiatric inquiry discloses the nature of these difficulties and the important causative factors underlying the problems presented. Treatment work on these cases involves adjustment of the employee *right within his department.* This is accomplished through frequent contacts with the psychiatric social worker or the psychiatrist, and a well-planned therapeutic régime is followed out over a sufficiently long period to bring about changes in the behavior of the employee.

Illustrative cases

CASE NO. 1. Female. Age 20.

Problem: Referred by Buyer who says, "This individual is a high cost of selling case. It costs too much to maintain her in her department. She does not earn her salary. Apparently is a health problem; is not aggressive and we wonder whether she is well suited for this sort of work."

Physical findings: Height 5 feet 3 inches. Weight 100 pounds. Under-nourished. Her blood pressure is low, and she gives a history of fatigue, indigestion and insomnia. She has suffered a good deal from constipation and headaches, and goes to the hospital quite frequently for consultations.

Mental findings: Her intelligence quotient is 96, which gives her an average normal intelligence classification. She is good in her learning ability, and is quick in movement. She shows a fair grasp of problems presented, and has good judgment and insight. Her intelligence is undoubtedly much higher than the test score would indicate. She could have done better on verbal tests, but for her language difficulty. (Is foreign born and not thoroughly familiar with the English language.)

Her personality make-up, however, is of such a character as to handicap her in selling. She is stiff and formal, aloof, stilted, and impenetrable, but not of such a nature as to cause either antagonism or

resistance. She is extremely courteous and well-mannered, but too shy and retiring. She is a very attractive young woman with a distinct accent. She is very self-conscious, and is much more concerned with the type of impression she is making on you than she is with focusing her attention on the situation facing her, whatever it may be, and adequately meeting whatever problem reality presents. She is introspective and mentally preoccupied. There is some evidence of a mental conflict over past personal problems. She has recently had a period of acute depression, lasting several weeks, and has not entirely recovered. There is some pessimistic reverie over her situation. Her attitude towards the interview, however, is thoroughly coöperative and constructive. It is believed that her main difficulties are temporary in nature.

Social findings: She is single and lives in a girls' club here in the city. Her father is dead. Her mother and four brothers and sisters are in Europe. She has no home problem, other than separation from her family. Her education abroad consisted of what would be about one year at college. She taught for two years before coming to the store.

Job behavior: At her work she made only fair contacts with customers. While willing and in no sense irritating, she was lacking in alertness and aggressiveness in carrying out a sale. There seemed to be no great interest in the merchandise, nor is she effective in her relation with customers. She seems too much self-centered and too much interested in getting sympathy. She remains entirely apart from the other clerks, is not helpful to them, and while not disliked she obviously is not one of them.

Conclusions and remarks: We have here a young woman, foreign born, with a distinct and what many customers have called "an attractive accent." She is neat and makes a good sales appearance, being rather good looking and well-dressed. She has normal intelligence, but presents many personality problems which interfere with her sales ability. It is believed that some of her difficulties will clear up under psychiatric treatment. At present she is running low books, and is receiving a much higher salary than her department head feels she is worth.

Follow-up: Our first effort was to give her insight into the sort of problem she presented. That is, after we had reviewed all of the outstanding facts in her case, we endeavored to point out to her frankly the natural outcome of day-dreaming on the job, neglect of important hygienic matters in lowering her capacity for energy output, and the part she herself was playing in making her work unproductive and unprofitable to the store.

Then we discussed freely with her a careful health régime covering diet, rest, sleep, recreation and mental attitude towards her own personal problems, and decided on a treatment program in which she herself, under our guidance, was to work out a reconstruction of her own interests and attitude, or, if possible, of her main personality trends.

Her response to our efforts was gratifying. She quickly became oriented to the situation, following out rigidly our advice along hygienic lines, and made conscious attempts to extrovert her own personality, —or rather, to tie herself up with her job environment and the world of reality as she faced it each day. She made most of the recreational contacts we provided for her, and naturally, with better eating habits and freedom from depressed emotional states, her appetite increased, she put on weight, and her blood pressure became normal. Her insomnia disappeared when the conflicts and anxiety states no longer dominated her emotional life. After a while, a noticeable change in her outlook and perspective was manifested, and a better attitude towards herself, her work and others appeared. From the standpoint of her behavior on the job, our psychiatric worker gets the following report from her department head. "Miss —— has astonished everyone by turning in the best books in her department since she came to your office. Her sales record has been excellent, and the girl herself seems much brighter and happier. I personally am delighted with the results in her case."

We continued our treatment program through a period of several weeks. Her

general health greatly improved under a closely supervised régime and her mental condition entirely cleared up.

Our study of her sales record showed the following. The week before we saw her, her sales were $163.00. They had been running at about this level for months. The following week they were $553. The next week they were $509. The next week $513, and they have remained good up to the present time.

Ten months after our first interview with her, our follow-up record shows the following statement from the department head, "She continues to lead her department in sales."

The above case is a rather striking illustration of the influence that certain apparently unimportant issues have in interfering with the job success of a given employee. The problem itself is a simple one, and presents a rather common mechanism found in the usual run of problem workers. She was more promising material, however, than the average problem case, and proved to have a dynamic personality. Her attitude, interest and wholehearted coöperation stood out as unusual throughout our entire contact with her. The next case, while not such promising sales material, illustrates what can be accomplished when a serious effort to understand and deal intelligently with the adjustment difficulties of an employee is attempted. It illustrates the faulty attitude of a department head, who showed poor insight into the case of a young woman whom she had decided to lay off because she appeared stupid and seemed to her to be poor material. This snapshot sizing up of people, so common in business, is the cause of many a work failure.

CASE NO. 2. Female. Age 24.

Problem: Referred by Department Head with the following statement, "She should be tested as she is dull and stupid. I think she is poor material, and I have already made out a lay-off slip and sent it through to the General Manager's office, but I should be glad to have you study her."

Physical findings: Height 5 feet 3 inches. Weight 117 pounds. Physical examination disclosed some inflammation of the gums. She is in need of dental work. Her vision is defective, and she should wear glasses. She has lost 24 pounds in the last four months, and at the present time complains of loss of appetite, fatigue and "needing a rest." She has had a good many consultations with the hospital physicians recently for various minor complaints—"headaches, indigestion, insomnia, nervousness, run-down." Physical examination does not disclose any positive findings.

Mental findings: Individual secures an intelligence quotient of 88, which gives her a classification of dull average intelligence. She is somewhat slow in performing her psychological test, but is accurate and painstaking. Her attitude was particularly good towards examination.

She has a fair sales appearance, is pleasant, agreeable, seems most anxious to please, is neat, fairly well dressed, but not attractive or good looking. She wants to succeed at her work, but is over-anxious and fearful. She is naïve and too shy and retiring to be convincing. She has suffered much from insomnia and periods of acute depression, worrying over her home troubles; is lonesome and homesick, but realizes that she would not be happy to return home under present home conditions. She is too shut-in to make friends easily. Since coming to this country from Great Britain, she has established no friendships. As a consequence, she feels out of place, disheartened, and cries a great deal. Of late there has developed a great fear of losing her job, and inasmuch as she is totally dependent upon her weekly salary, she does not know what will become of her in case she does lose it. She does not seem to know how to make headway, and, having had no experience in the past that would

teach her how to meet such problems, appears to be bewildered by the size and complexity of things in a great store.

She is responsive, polite and courteous, but obviously has a great deal of pessimistic reverie, with a marked lack of self-confidence. She becomes greatly frightened when admonished or criticized by her superiors, and has frequently to leave the floor to go to the girls' room.

Job behavior: Her contact with customers is good, though not particularly effective. They like her because she is anxious to please. On the floor and at her work, however, she seems detached a great deal of the time, day-dreaming, mentally preoccupied and slow, but when awakened out of her reverie she is responsive and obliging. She seems timid in her relations with the other girls, and does not appear to know how to make herself easy and natural with them. Her reaction to her superiors is more that of a frightened child. Her knowledge of stock is inadequate.

Social findings: Her mother is dead and her father married the second time. The step-mother has been very unkind to her. Her only brother was killed in the war, and her two sisters are married. She left home because of unhappy home relations, and determined to make her way in this country. Her education was of grammar school character. She has had several years experience in selling in a small town store.

Conclusions and remarks: We do not recommend lay-off, but do advise adjustment work. We have here a young woman of good enough intelligence and fair enough sales appearance, who, providing we can secure an adjustment of her personality disorders, will make an acceptable sales clerk, inasmuch as she has a very responsible and dependable nature, is courteous and anxious to serve, and will give her best to the department. She is in need of a physical and mental hygiene régime. Her weight needs to be built up, her insomnia overcome, and her depression cleared. It is believed that if this can be done her detached attitude and obsessive reveries which seem to be the big factor in handicapping her sales ability will disappear.

Follow-up: After the report was made, the buyer took a different attitude towards this employee. She became more friendly and understanding in her relations with her. She talked with her and sought to be helpful. Realizing that much of the problem was shyness and timidity, based upon a strong inferiority background, she made a different approach to her and sought to aid and guide her rather than to intimidate and frighten her when she made errors. The employee kept in close touch with the psychiatrist who sought to give her an insight into her personal problems, and who worked out with her a more satisfactory way of meeting them. Her insomnia disappeared altogether within the first week. She regained her appetite, began to increase in weight and improve in her attitude towards herself and the difficulties in her job. Self-confidence increased. People seemed to be interested in her. The world took on a brighter outlook. Her sales record improved. She got acquainted with some of the girls, and went out to luncheon with them. She began to drop into the rest rooms at the lunch hour, and took some part in the recreation of the other employees. She kept a diary, and we saw this note "I am doing the best I can. My weekly quota is $250. My books shows that I have made $289 this week. I am much better now and feel a little happy at times. I know what it is to be hungry and sleep good too."

The psychiatric worker's report from the buyer, two weeks after she was referred to us for study, is as follows: "She does anything you ask her to do. Is always cheerful about it. I would like to keep her. She is slow at getting things, but once she has them, then they're there." Later she states, "Very favorable. Special emphasis on willingness and good nature with customers."

She has been closely followed up, and the last report from her department is that she is doing well and they do not want to lose her. She became in the long run a well-adapted and satisfactory employee.

CASE No. 3. Female. Age 48. Sales clerk.

Problem: Acting peculiarly on the floor,

and complaining bitterly to her Buyer of the persecutions of her associates, she was referred to the Conference Office for psychiatric study.

Study: In the Conference Office this woman showed an acute anxiety state; was in great distress with marked depression. She says, "I have not been able to sleep or eat for five whole days." (Cries and wrings her hands.) "I saw a tall detective lean over and whisper to a girl at the —— counter, and he said, 'You watch that woman, she is a thief, and is stealing from the store.' Then there are two elderly women who have put the girls up to watching me, and the girls pass up and down the aisle saying, 'Keep your hands off the —, etc.' They whisper to each other about me and wink in a knowing way as if to imply they are on to me. They are all talking about me."

A careful investigation was made, and it was disclosed that the employee had seemed ill for several days, but that for weeks she had been very "nervous," stayed by herself, was over-sensitive and "imagined" things. There was no basis for suspecting her honesty; nothing was missing from her department and she was considered one of the most valuable sales clerks in the store, and regarded by all as thoroughly reliable.

Her aged mother had been seriously ill for several months, and at this time was near death. This employee was up with her a great deal at night and as a result had lost much sleep. She also had to do the housework and the cooking, which, with the arduous duties of the day as a sales clerk, had brought on acute fatigue. Such a condition, in a distinctly psychopathic personality, who for years had exhibited an unstable nervous system, on to which was engrafted an anxiety as to the possible death of her mother, and the possible loss of her job inasmuch as she was falling down in her work, finally resulted in a full-blown mental disturbance.

In our examination we found her suffering from well-marked delusions of persecution, retardation of thought processes, with a depressed emotional state and slowing up of bodily movements.

She was placed at once under psychiatric care, reassured regarding her job and her department worries. A social service worker and nurse were sent to her home, and for a few days she was kept in bed and carefully nursed. In time she began to recover, returned to the store, was placed back in her old department under the best possible controlled conditions, in the hands of a Buyer who was not only sympathetic but intelligently understanding. In the end she recovered and is still with the store as a valuable employee.

Follow-up: Ten months later her buyer reports, "She is doing very well, and no longer seems worried or fearful." One year and a half later, her Buyer reports, "She is good and in her present capacity, I couldn't do without her. There is no problem or complaint." Her section manager says, "Miss —— is satisfactory, and a very efficient sales clerk."

Significance of these cases

The whole purpose of these case records is to re-emphasize a point already partially understood by personnel people but by no means made as much of in actual routine case handling as it should be; that is, that mere well-wishing or sympathy or routine welfare work, such as home visiting or a week at camp or mere transfer to another department or simply further training by the divisional teacher, does not get at the bottom of the personal problems that underlie and disturb the emotional life of many workers. The individual case method of handling, based on an actual investigation of all the important causative factors and a treatment or adjustment program suited to each particular case, is the only fair and unprejudiced, as well as constructive, procedure to follow in personnel work.

The above three cases represent that group of problem workers re-

quiring adjustment of their *personality problems*, the issue being a treatment one,—the personal adjustment of the individual rather than a transfer to some other job. These are not job misfits, but personality difficulties or maladjustments, and these represent the largest proportion of our problem employees.

This group of cases is frequently regarded by their department heads as not only not productive, but of questionable value to the store. A tremendous number of these employees are bandied about from one department to another through the process of transfer, in the hope that they will ultimately find the work in which they are most interested and for which they are best suited. Some make partial adjustments; others lose out altogether and are ultimately laid off.

The pity of it is that too often the individual constitutional factors underlying their work failure are overlooked, as far as actual adjustment and treatment are concerned, and the employee is not given a square deal from the point of view of good personnel practice.

These cases can, for practical purposes, often be cleared up right within their departments, *i.e.*, their main outstanding problems can be adjusted, and they can be rendered assets rather than liabilities.

These particular cases are offered simply with a view towards encouraging more careful and understanding personnel work.

B. JOB MALADJUSTMENT

We come now to a new group of problems in which the *job maladjustment*, rather than the personality disorder of the employee, stands out as the most important factor in the situation. To be sure, we will have other issues to face, but the transfer to more suitable work, with proper training and adjustment on the job is what is needed.

Illustrative cases

CASE NO. 4. Age 19. Female. Cashier. *Problem:* Referred by Superintendent of Department, on account of the great number of errors and shorts which she made, with the statement that if she did not improve soon, she would be laid off.

Physical findings: Height 5 feet 8 inches. Weight 110 pounds. Considerably undernourished. Has had several attacks of tonsillitis, and recently has had a growth on plantar surface of right foot which has been removed. In re-examination, August 23, 1926, she was rated "B" by Hospital, due to underweight.

Mental findings: She has an intelligence quotient of 88, rating her as dull average in intelligence. She was found to be slow in speed tests; fair in learning ability; poor in motor dexterity; and showed a tendency to errors in accuracy tests. She has a pleasant and agreeable personality make-up, though a little peculiar and not very accessible to a personal interview owing to rather marked conflicts. She does not concentrate well on the things at hand, showing a definite tendency to mental reverie. She has a good general appearance, is rather attractive, neat and well-dressed. There is considerable emotional upset with some depression. She is rated poor on our cashiering tests, and because of her mental condition we do not believe she should be kept at this work as she will make shorts. She has a good personality for sales, and if her mental conflicts can be successfully dealt with, she ought to make a good sales clerk.

Social findings: Mother dead; father married second time. Home situation unhappy. Had to leave home and is boarding with private family. Said that she was forced out of her own home. Has to

support herself. Has had two years of high school.

Conclusions: This girl will never make a successful cashier. She is too slow in motor speed, and is not accurate by nature. She should succeed fairly well at sales. Transfer to sales is recommended.

Follow-up: Girl was transferred to house furnishings as sales clerk where she did well, being rated as satisfactory by the head of the department, who expressed himself several months later as pleased with the new clerk. Inasmuch as she did not like it in the basement, she was transferred, after a period, to a department on the first floor where she did fairly well. She has been under the supervision of the psychiatrist, and has improved considerably in her personality disorder. Her health is excellent, and her sales are fairly good. The average selling cost of her department is 4.35 per cent, while this employee's selling cost is 4.29 per cent. Her interest in stock has been marked. She has proved reliable and gradually has taken on responsibility. Her contact with other girls has been good, and she is now being tried out for head of stock,—a promotion for which there is considerable competition. She has developed an alertness, aggressiveness and self-confidence that has made her effective as a sales clerk.

CASE NO. 5. Age 19. Female. Cashier.

Problem: Referred for examination by Divisional Teacher in Training Department, who said, "She seems to be suffering from some kind of nervous disorder. Her actions are especially queer when she is sitting near the head of the belt, and then she makes a lot of errors. Would suggest an interview." The Superintendent of Cashiering says, "She is slow at work, inaccurate, and I plan to lay her off."

Physical findings: Vision in both eyes poor. Should wear glasses always when at work. Needs dental care. Is somewhat overweight, and has enlarged, diseased tonsils.

Mental findings: She has an intelligence quotient of 100, giving her a rating of average intelligence. She shows poor speed in test; her mental processes are slow, and her accuracy is only fair. Shows a tendency to error making; learning is good, and knowledge of arithmetic is good. There is some tendency to day-dreaming, and she has an anxious, somewhat nervous facial expression. She is emotional, but very pleasant and agreeable. There is a considerable tendency to reverie. Seems to be eager to make good, and is very responsive to suggestions. She is not sufficiently alert, however, and is not well enough integrated to become an efficient cashier. She is at present suffering from a mental conflict, and is in need of psychiatric treatment.

Social findings: Denies any home problems. Lives with parents. Went one year to college. Has had three previous positions, two in selling (employed in each place between five and six months), and one as a cashier in —— store. She was laid off after Christmas.

Conclusions and remarks: The girl is not only too slow for cashiering, but she gets too frightened when handling money ever to succeed as a cashier. She might do as a marker. Recommend transfer.

Follow-up: Transferred to the Marking Room. Training Worker's Report, "Could do the work very well, but think she is not interested." Later she reports, "Talks too much, but is easy to get along with and pleasant." Again in another report, "Can be fast, but is sometimes slow. Is very courteous, but day-dreams. Can do work well if she concentrates." Later the Department reports, "This employee is beginning to be better satisfied and seems to get more pleasure out of her work. Attends to her job. Is now a good worker; nice appearance; good type."

All the while from the time that the transfer was put through, the girl was kept in close touch with the psychiatrist. She had bad mental habits of idling, day-dreaming, and letting her mind wander off from the work at hand, but was so responsive and apparently eager to coöperate that we thought it might be worth while to try her out, aiming at a re-educational program. She showed considerable improvement.

Three months after transfer from cash-

iering to marking, the supervisor reported, "She is a good worker. There are no complaints, she is doing good work, and is pleasant and does everything she is asked to do." Six months after her transfer the supervisor reports, "The girl is doing all right."

If we can get markers from the lay-off group of other departments, and they make good, it is a saving in employment.

CASE No. 6. Female. Age 22. Sales clerk.

Problem: Referred by Buyer who says, "Girl is depressed, getting thinner every day. Goes to the hospital a great deal. She is late frequently and not profitable as a sales clerk. Her selling cost is high, and I am wondering what should be done. She is a very nice person; has a lot of home problems, and it seems too bad to lay her off."

Physical findings: Height 5 feet 6¾ inches. Weight 109 pounds. Complains of frequent colds and fatigue. Has been to the hospital 16 times within the year, for consultation with physicians. Sent to the New York Tuberculosis Clinic, to determine whether she had tuberculosis. Report negative. Has sinus trouble. Loses a good deal of time from work on account of poor physical condition. Nothing specifically discovered in physical examination, other than underweight, sinus condition and tendency to frequent colds.

Mental findings: Her intelligence quotient is 102, which gives her a classification of average normal intelligence. She is rated good in speed tests, good in accuracy tests, good in motor dexterity tests, good in learning tests. She is a coöperative, responsive individual, who over-reacts to her own physical condition, and whose mind is unduly centered on her own bodily sensations. She "favors" herself too much and becomes over-anxious when not feeling well. She is not aggressive and does not make effective contacts in her work with customers. There is a tendency towards pessimistic reverie, and she is not alive on her job. She is an introverted type and is better suited to clerical work then sales.

Social findings: Graduated from high school at the age of 19. This is her first position. She is single and lives at home with her mother and four sisters. Three of the girls support the family. She is engaged to be married, and the matter has been blocked, due to the financial condition of the family. The father is dead. Her present work is of such a nature as to make her an unsatisfactory employee.

Conclusions and remarks: We have here an individual of average intelligence, in poor physical condition, with mild personality disorder in which a job maladjustment and certain home difficulties play a vital part. We believe that transfer to suitable clerical work, with proper follow-up should result in a satisfactory adjustment of this case.

Follow-up: Individual was transferred to a clerical position in one of the offices of the store. She is off her feet all day. Her health is greatly improved; she has gained in weight, and at the date of present writing —8 months following our original study,— she "is doing splendidly; has improved physically, and they are much pleased with her." The girl herself likes her work very much, and her adjustment seems satisfactory.

CASE No. 7. Female. Age 19.

Problem: "Her selling cost is very high, considerably above the average in her department. She is a poor sales clerk, seems slow, sleepy, no ambition and not aggressive."

Physical findings: Height 5 feet 4½ inches. Weight 108 pounds. Slightly underweight. General physical examination negative, and her clinical history is also negative with the exception of frequent attacks of la grippe and recent loss of weight. She complains of fatigue and looks tired.

Mental findings: Intelligence quotient 77, giving her an intelligence classification of subnormal. She is poor in speed tests, but good in accuracy. She has a worried anxious look, and is evidently under an emotional strain. She seems to be a very sensitive type of individual, easily hurt. At the same time, she is thoroughly coöperative and responsive, and seems eager to make a success, but is too passive, shy and timid, too frightened and self-conscious to

put herself across with customers. Her voice is small and pinched. She has an emotional, neurotic and poorly integrated personality. She is apt to be found daydreaming in her work, and does not keep her attention fixed on her tasks.

Social findings: Graduated from grammar school at the age of 15, and worked for a while in a small town in New Jersey, in a novelty shop, pasting on labels. Was there for only a few months. Then she worked for a store in Brooklyn for a few months, as a mail-order clerk. Resigned on account of the small salary, and came to the store, being there now over two years.

She lives with her parents. Father is an invalid whose illness affects very seriously her own emotional life, as she and her father are very close to each other. There are five brothers and sisters, all of whom are working.

Conclusions and remarks: We have here an employee who did well as a merchandise checker, and whose general physical appearance justified the Management in feeling that she might make a successful sales clerk. She shows a very distinct job maladjustment, which has behind it physical, mental and social factors. She is in need of some constructive medical program, as well as psychiatric contact. The job at which she is at present employed requires considerable initiative in selling, and she has not the aggressiveness needed. Her intelligence is not of the highest sort, and her personality disorder is of such a nature as definitely to interfere with her success in this department. We are rather inclined to recommend lay-off, but she seems so anxious to make good, and so eager to adjust herself, that a suitable transfer with psychiatric treatment is recommended.

Follow-up: Transfer to the contingent sales force was made, and her work consisted of selling in various departments, serving largely where there were big sales going on. Here her work has proved satisfactory. Definite success in the contingent force has given her a sense of achievement and self-confidence that is striking. People have remarked on the apparent change in her personality make-up. She is much happier, and at the present writing, nine months from the date of the original examination, she is regarded as an asset to the store. Her physical condition has been carefully supervised, and her health has greatly improved. Her voice now has a less strained and pinched note, is fuller and better modulated. Her emotional life seems freer from unsolved problems, for she has demonstrated her ability to succeed.

C. CASES WHICH CANNOT BE ADJUSTED UNDER STORE CONDITIONS

We have here a group of people who present outstanding personnel problems to the store, and who, following upon a careful psychiatric examination, show physical and mental conditions of such a nature as to justify us in believing that an adjustment of their difficulties cannot be brought about satisfactorily and profitably under store conditions.

Illustrative cases

CASE NO. 8. Age 26. Female. Non-sales department.

Problem: Referred by the head of her department who said, "She has had a great many absences during the last two years. She has been shifted a good many times within this office. We cannot seem to place her properly. She resents authority, is uncoöperative, and has a feeling of being very important. She displays great slyness and cunning in covering up her errors. Has made many mistakes, but is very shrewd in not being caught. Of late, when she goes out into different departments in connection with her work, she wastes her time and we are sure to get back complaints. She was promoted at one time to be head of files in this office with several girls under her, but she "rubbed it in" on the other girls to such an extent, and was in general so difficult to get along with, that she could get no coöperation from them."

Physical findings: A rather large, well-dressed, well-developed, fairly good looking young woman, in apparently good physical

condition. She has been a chronic user of the hospital, and during the last year has been under treatment for "run down condition." She was out for a period of three months, receiving the store's Mutual Aid. At the present time she is in good physical condition, and her physical examination is negative.

Mental findings: Employee has a broad grin on her face. Is much elated and seems so full of energy she can hardly keep still. She refused to submit to psychological tests, or bother with talking to anyone, except with the Doctor. "Could not take my time for trifling things."

There is a smug satisfaction on her face, and an expression of absolute well-being and complete self-confidence. Emotionally, she appears elated with a marked euphoria evident. There was great psychomotor activity characterized by a tendency to be in constant movement. Her thought processes were marked by a distinct flight of ideas, that is, she talked incessantly and changed from one subject to another so rapidly that she often halted in the midst of sentences which she never finished. She stuck to no goal idea, each new thought promptly displaced the others, and, like a child chasing butterflies, off she would go rattling a constant din of unrelated conversation.

This employee is suffering from an acute mental disease. At her work we find that her behavior to the job corresponds well with the mental symptoms she exhibited in the mental examination. She would not finish one task before she started on another. There was a great pressure of activity, with very little of anything really accomplished. She would have an idea, and then run to the Division Head regarding it, and before she had gotten well started on this new line of activity, she would all of a sudden be taken up with an entirely new thought and a new line of interests.

Social findings: Individual is single, and lives at home with mother, brothers and sisters. There are no financial or domestic troubles that would affect her work or her general adjustment. She is a grammar school graduate, and never went to high school. Had only one previous position before coming to the store, which was for clerical work at which she remained one year.

Conclusions and remarks: This employee is in need of psychiatric care and treatment, under proper hospital régime. She has been a problem to the department for several years. Her salary is $35 a week, and yet her Department Head says she does not compare in value with a $17 a week girl. She is not likely to improve on her job, inasmuch as she has no insight whatever into her mental condition, and resists absolutely all treatment suggestions. If retained she is likely to become a serious liability to the firm. We have been unable to get her support, or that of her family, in any treatment régime.

Follow-up: The above report was made to the Department Head, and her office retained her for a few weeks, attempting to adjust her, but with no success whatever. She was later laid off.

CASE No. 9. Male. Age 37. Salesman.

Problem: Referred by Buyer who says, "This individual has only been with the store two months. There have been a good many absences. His selling cost is high, and although he has a good personal appearance, he is not a good salesman. He seems to be slow, and he is probably a health problem."

Physical findings: Height 5 feet 7½ inches. Weight 131 pounds. Blood pressure 132/80. Vision, right eye, normal; left eye, very poor. Large central scotoma in left eye. Examination disclosed exudation into eyeball. Shows traces of albumin in urine. He is suffering from an atrophic rhinitis, with a very offensive odor. A sample of blood was taken for a Wassermann test, which proved positive for syphilis.

Mental findings: Intelligence quotient 80, giving him the rating of dull average in intelligence. He is rated poor in arithmetic. Individual is a neat, rather nice looking man, with an anxious, worried expression. Speaks in a jerky fashion, with a harsh and not pleasant voice. Not particularly aggressive and alert, and is apparently anxious over his work relations. Is in-

clined to over-react to disappointments, and at times is very moody. He compares, rather feelingly, his former position of buyer in another store for thirteen years, with that of sales clerk at the present time. He finds it difficult to adjust himself to the step down in his business status. There is some loss in memory, and definite evidence of mental deterioration.

Social findings: He is single and lives with a married sister. Had a year and a half in college, and was for thirteen years connected with a small firm which has now gone out of business.

Conclusions and remarks: We have here a new employee who has been with us only two months. Had the above examination been made before his employment, we do not feel that we could have recommended him as a good personnel risk. There is evidence of syphilis with mental deterioration; he is distinctly a medical problem, of such a nature as to render him a liability to the store. We recommend his lay-off.

CASE NO. 10. Age 33. Female.

Problem: Referred by Employment Department with the following statement, "Individual has been doing poorly in her department. A transfer slip has been made out and we would like advice in placing her."

Personal history: Employee was born in New York. Her childhood was healthy. Never graduated from public school, only got as far as the seventh grade, when she left at the age of 14. Lives at home with her parents here in the city. Father a conductor on street car. One brother also works.

Has had no previous work experience. She was employed first as Post Office messenger in this department store. Remained in this position four years, when she was transferred, to———. She did this for three and one-half years, and was then transferred in the same department. Later she was again transferred out of this department to a sales department. She was not satisfactory in that department, so a transfer slip was made out and sent to Employment Department. She was referred by the Employment Department for advice as to placement. She had been here in the store seven and one-half years.

Our investigation of her work brought out the following. The supervisor states that the girl had been doing clerical work in his department for several years. That about one year ago, she was out ill for about two months. Previous to her illness, her work had been satisfactory, but since her return she was exceedingly nervous. She was not as quick as formerly in her work, and they decided to transfer her to some position of less pressure, and regarded sales as suitable for her.

The assistant buyer in Department —— Sales, said, "The girl came in to our department in September of this year. She seems to be ill, and goes to the hospital on an average of twice a week. She seems inactive,indifferent,languid and day-dreamy. She keeps her eyes either on the floor or on the ceiling most of the time. She is very careless with her stock, is never obliging in doing extra work. She appears very worried most of the time. She is nervous, restless and fatigued. Her memory is poor and her books are poor. She is the poorest girl in the department. She is absent, late and off the floor often."

She has gone to the hospital a good many times for constipation, laryngitis, enlarged tonsils, etc. She was out on the store's Mutual Aid 75 days during the latter part of 1924, and the early part of 1925.

This individual gives a history of illness about one year ago, which she designated as "nervous breakdown." We could get no clear history from her. At present she complains of headaches, dizziness, digestive disorders, fatigue, loss of appetite, etc. Her attitude is very poor towards the examination. She is quite uncoöperative, seems far more interested in having something done for her, and in securing her "rights" here in the store, then getting well and meeting her obligations to her department. She demands a period of rest and absence, and is unwilling to discuss psychiatric treatment for the solution of her difficulties. Her intelligence quotient is 76, which classifies her as subnormal, and her personality disorder seems to be of such a nature as to cause the examiner to be

dubious regarding any immediately successful outcome from treatment. She is resistive, suspicious, inaccessible, and presents a very marked paranoid state, with no insight.

Unfortunately for this girl, medical treatment for minor ills has served to focus her attention on herself to the extent that she not only exaggerates simple physical conditions, but demands treatment for her maladjustments at the physical level, unwilling to admit for an instant the mental factors involved. Nor is she eager for a termination of her illness, inasmuch as a certain definite satisfaction has been gained through the sympathy and attention she has received at home and from her physician.

The fact that we cannot recommend her imposition upon another department seriously complicates the issue, inasmuch as her own department is quite unwilling to continue her as a liability. If she had had sufficient insight into her own problems to adopt a coöperative attitude, something might have been done in the way of treatment.

Her present mental condition is suggestive of the beginning of a more serious disorder, but neither patient nor family will admit the need for psychiatric treatment. We can only recommend the termination of her employment, with some financial consideration of her several years connection with the store.

We reported to the Employment Department that we regarded her as poor employment material, and could not recommend a transfer to any other position in the store, and that we would suggest a lay-off. She was returned to her department, and within two weeks was laid off by her department head.

CASE NO. 11. Female. Age 59. Cleaning woman.

Problem: Referred by supervisor, who says, "She is a good worker, but exceedingly irritable. Is a trouble maker; cannot get along with the other women; is very disagreeable to them. Keeps mostly to herself, but stirs up trouble between employees. Says things that are not true, and causes some of the people to threaten to resign."

Physical findings: Height 5 feet 4 inches. Weight 120 pounds. No clinical history of any illness, and at present is in good physical condition. She has not consulted the hospital since she has been with the store.

Mental findings: Intelligence quotient 105, giving her a rating of average normal intelligence. She is rated good on speed tests, good in motor dexterity, good in accuracy. She should be a very capable worker. She appears very alert and aggressive, answers questions very promptly and brusquely. Is somewhat suspicious, and resistive. Is loath to go into details, but declares that one special person in her department is an enemy, who has been doing all she could to persecute her ever since she has been with the store. The department head herself she believes to be connected with a group of conspirators, who for several years have been writing her letters, trying to injure her reputation, and planning by hook or crook to take all of her money and her property, to secure her discharge and to make her life unbearable. These people were originally employed in running a correspondence school for girls wishing to take up a business course. They got her as a student, but did not deliver the courses promised. They, however, tried to make her pay for value that she never received. These people "have filled the newspapers full of falsehoods regarding her life; have caused her to move her room from one place to another; have employed detectives and other means to make her life a burden."

She is preparing an astounding revelation through the courts, within a few months of this gigantic conspiracy, and with glee and smug satisfaction she tells the interviewer of the details of her plan. This woman is insane, and is in need of hospital care and treatment.

Social findings: No relatives are alive, according to her statements. She is single and lives in a rented room. She is unwilling to disclose much about her past.

Conclusions and remarks: We have here a type of employee for whom nothing in the way of successful treatment on the job, we

believe, can be accomplished. Her attitude was most resistive, and actually antagonistic to any efforts whatever at breaking up her fixed ideas. She has definite delusions of persecution; there is great restlessness; she has marked ideas of reference; and she is likely to become a menace to the store, if she is not placed in contact with proper medical supervision. We recommend her lay-off and hospitalization.

D. TRIED AND FOUND WANTING

The group herein included represents employees whom at our first examination we wished to keep under observation, to see if something could not be done through treatment to adjust them, but who, in the long run, proved to be hopeless cases and had to be laid off as unprofitable material. These were cases in which we failed, from our point of view, to accomplish anything of definite value in making them assets to the store.

Illustrative cases

CASE No. 12. Female. Age 31.

Problem: "Is a high cost of selling case, that is, her sales are too low, and her books are too poor to make her profitable to the department. She has not run good books for some time."

Physical findings: Height 5 feet 3 inches. Weight 130 pounds. In fairly good general physical condition. Has suffered some from gastro-intestinal upsets recently, but at the present time gives no history of physical complaints.

Mental findings: Intelligence quotient 101, giving her a classification of average normal intelligence. She is rated "good" to "fair" in accuracy; "fair" in arithmetic and "poor" in speed.

She is a quiet, reserved, self-conscious individual, who seems stiff, inaccessible and detached. She sits on the edge of her chair during the interview, and is not communicative. In her work she appears to be in a reverie. She is listless, slow in making replies to customers, careless in her dress and general appearance. She approaches a customer, asks no questions, stands silently and waits. Her replies are in monosyllables. Her movements are stereotyped; her voice is high-pitched and monotonous.

In the mental examination her responses were slow, and she complained of difficulty in thinking. She herself had noticed a change during the last two or three years. Once she was engaged, and her fiancé died. Since then there has been a loss of interest in her environment,—headaches, feelings of strangeness and difficulty in thinking. Her Buyer has noticed a marked change in her personality, and her sales have been by no means as good as they used to be.

Recently she was overcome by gas in her apartment, and her friend who lived with her did not recover from the asphyxiation. It was never cleared up whether or not there was a suicide pact. The girl herself would not discuss the matter.

We have in this employee the symptom complex presented by a fairly well-known form of mental disease, and she is in need of psychiatric treatment.

Social findings: Individual never got further than the eighth grammar grade. She did not graduate from public schools. After this, she worked in a factory for two years, and then as a domestic for a short while; finally, she canvassed as a book agent. She was unable to make this go, so she became a sales clerk. She is single and claims that her people are dead. She lives here in the city with friends. Denies that there are any home problems.

Conclusions and remarks: We have here an individual whose mental condition is such as to make it unlikely that psychiatric treatment will prove of any value in adjusting her to her job. She might be tried out at clerical work, inasmuch as she has been with us for four years, and some effort might be made to keep in close touch with her to determine what can be accomplished.

Follow-up: This employee persistently refused a transfer to clerical work. She was retained for a period of weeks in her department, and efforts were made to improve her mental condition. But as

time went on, it became obvious that the procedure would be a costly one as far as the store was concerned, and in the end, probably no satisfactory results actually achieved. So it was recommended that she be laid off, and placed in touch with clinical and social facilities in the community.

CASE No. 13. Male. Age 58.

Problem: Referred because of "numerous complaints. Much worried about himself. Goes to the hospital frequently. Thinks he is going to die in one of his attacks."

Physical findings: Height 5 feet 3 inches. Weight 118 pounds. Slightly undernourished. Scar from an old operation for gall stones. Teeth in very bad condition and urgently needing attention; hypospadias; eccentricity in gait, attributed to attacks of pain in the operative region. He sways in the Romberg position, has Argyl-Robinson pupils and a fine, constant tremor of hands.

Mental findings: This individual has normal adult intelligence and secures an intelligence quotient of 100. He worked rapidly and fairly accurately. Makes errors on a simple problem of multiplication. There is no evidence of mental deterioration, though he gives the appearance of premature senility. This individual suffers from a host of psychoneurotic symptoms. He has weak spells, during which his hands and feet become cold and clammy, his arms and legs give way, and he feels as though he cannot use them. There is, at these times, palpitation of the heart, difficulty in breathing, trembling, and he feels as though he is going to die. He suffers constantly from gastric distress, and has to keep his vest and the upper part of his trousers open to relieve the abdominal tension. At night he is unable to sleep more than an hour or two. Complains of great restlessness and feelings as though his heart will stop beating and respiration seems to cease. He keeps a bottle of aromatic spirits of ammonia by his bed to give him relief. He suffers from fears of "falling in a fit." He has fallen "right off my feet," once or twice, but has never lost consciousness. He fears that he will break down and be unable to support his family. His emotional tone is constantly depressed. These mental symptoms have been built up on a physical background. There is a history of two operations, also excessive sex-life. Gives a history of having been a steady, constant, alcoholic drinker for a period of years up until two years ago. He drinks an excessive amount of coffee, as well as smokes excessively.

Our judgment was, from the beginning, that this employee offered a rather poor outlook from the standpoint of psychiatric treatment and personnel development. He obviously needed a thorough physical overhauling (the x-ray and the Wassermann proved negative). He also needed prolonged psychiatric treatment. A change of employment to outdoor life would doubtless be of value to him; while his retention in the store certainly could be no asset. His production now is poor, and there is every reason to feel that a deterioration (in this respect) will ensue. The biggest problem is the fact that he has a wife and two little children. His wife has been insane and is now recovering.

We tried out a treatment line for the period of one month, and he claimed to have improved in his sleep, appetite, fatigue and gastric distress. The more we saw of him, however, the more convinced we were of an incurable "illness complex," that thrived on medical attention.

Having in mind the fundamental issue of his future value to the organization, we could not honestly continue a prolonged period of treatment in the case of an employee who, at the best, would never become anything but a potential liability to the store. So, we joined the Department Head in recommending lay-off. He was placed in touch with outside work and some social service aid.

CASE No. 14. Male. Age 55.

Problem: A tall, well-dressed man of around sixty years, who gives his age as fifty-five years, makes a splendid first impression, voice low, well-modulated, with marked Southern accent; splendid use of language, showing culture and refinement. Appears superior to the average, and is extremely polite. Obviously a man of some

attainments, and one who has seen better days, until the fortunes of life forced him temporarily to descend (as he felt) to a department store. This first impression was quickly verified by his impatience at having his "valuable time" consumed in our attempt to understand why he left our employ. Finally, he clarified the issue by stating: "Obviously, I do not care to remain here when I can make more money in ten minutes along my own special lines in Wall Street, than I could ever make here in one month." This would have been sufficient to terminate the interview, but for our habit of persistent inquiry into each individual's employment history, physical and mental health, home life, interests, habits, amusements, recreations, attitudes, personality make-up, etc., no matter whether he has become a great business success or no. In this case, the psychiatric inquiry disclosed an outstanding mental disorder. He was suffering from delusions of persecution, circumstantiality in thought processes, enfeeblement of judgment, emotional irritability, ideas of self-importance, and a group of symptoms characterizing a form of mental disease known as *paranoia*.

He had only a very limited schooling, but had read superficially to a great extent, being keenly interested in increasing his vocabulary and extending his speaking acquaintance with various fields of human knowledge.

He was single and has spent his life as a clerk or floor-walker in the various department stores of New York, remaining only a short time in each place. His separations were punctuated by periods in Wall Street, when he invested his meagre savings, but to no avail as far as getting him any nearer the pot of gold at the end of the rainbow. Following each new venture on the Street, we find him ultimately returning to the department stores to recuperate his shattered fortunes, but never able to remain longer than a few months or, at the most, a year or two, because of the "dishonesty, underhanded plotting, secret-maneuvering and chicanery of personal enemies." "People who imputed to me motives and conduct that was but the reflection of their own unethical lives."

Here in this store he has had the same difficulties that have followed him throughout his department store experience. "Humility is not a dominating characteristic of mine, and I cannot accustom myself to the arrogance of inferiors." "You cannot have hundreds of people who are morally and ethically not right, in constant association with you, and yet be comfortable in coming in contact with such people." "There are things going on in this store, about which the Management knows nothing. They are very subtle. They are secret, but a shrewd man can see through such people. Of course, the Management does not know a good man, because of the hordes of malignant people surrounding him." "These people know I am different from them. All the while there has been a secret conspiracy going on, intending to discredit me." "It was just such conduct as this that landed certain people in another store, here, in the city, in the Tombs." "The great difficulty with this store is, that you have too many servant girls and stable boys in authority as executives." "Why, I can make more money in ten minutes than they can make here in one month." "The owners of this store should know of the underhanded methods that are going on."

This individual is totally lacking in any insight into his own personal difficulties, and is altogether devoid of any self-criticism. To succeed as a Section Manager, handicapped by such a mental condition, is out of the question.

CONCLUSIONS

These cases are fairly representative of hundreds of referred problem employees whose records are contained in our files, and illustrate in the main the essential issues involved in handling such problems.

Taking 1200 employees as a fairly representative group indicating the "run-of-the-mine" of the store at large, we have found that 19 per cent of the sales people and 23 per cent of

TABLE 1

Relation of reasons for referring cases to final status

REASONS FOR REFERRING	TOTAL	PER CENT OF TOTAL	ACTIVE (335, OR 67 PER CENT)											INACTIVE (165, OR 33 PER CENT)																									PENSIONED (1, OR 0.2 PER CENT)	ON MACT MUTUAL AID (1, OR 0.2 PER CENT)
			Adjusted		Under treatment		Promotion					Case hopeless	Case dismissed by Conference Office	Dropped (6, or 1.2 per cent)	Resigned (39, or 7.8 per cent)											Laid off (118, or 23.6 per cent)															
							Recommended by Conference Office			Not recommended by Conference Office																																	
			In department	With transfer	In department	With transfer	Promoted	Not promoted	Under treatment	Promoted	Not promoted				To be married	Home	Health	Leaving city	Return to school	Residence too distant	Dissatisfied with treatment	Dissatisfied with work	Dissatisfied with salary	Other work, more pay	Unsatisfactory	Poor risk	Incompetent	Unreliable	Undesirable	Careless and slow	Careless	Shorts	Lates and shorts	Errors	Attendance	Reduction of force		
Total	500		96	39	137	13	12	6	1	1	4	5	21	6	4	8	3	2	1	1	2	10	2	6	88	3	4	1	9	3	2	1	1	1	3	2	1	1
Per cent of total			19.2	7.8	27.4	2.6	2.4	1.2	0.2	0.2	0.8	0.1	4.2	1.2	0.8	1.6	0.6	0.4	0.2	0.2	0.4	2	0.4	1.2	17.6	0.6	0.8	0.2	1.8	0.6	0.4	0.2	0.2	0.2	0.6	0.4	0.2	0.2
Age	6	1.2	1	....	1	....	....	....	....	....	....	....	2	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Length of service	5	1	....	....	2	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Attendance	32	6.5	6	....	15	3	....	....	....	....	....	....	....	1	....	....	....	1	....	....	....	....	....	1	2	....	....	1	....	....	....	....	....	....	2	....	....	....
Day dreams	5	1	1	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....
Fainting spells	2	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....
Health problem	55	11	18	1	19	2	....	....	....	....	....	....	6	....	....	....	1	....	....	1	....	1	1	....	2	1	1	....	....	....	....	....	....	....	....	....	....	1
Home problem	5	1	1	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....
Nervous	29	5.8	12	2	12	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....
Erratic or peculiar	26	5.2	5	....	9	1	....	....	....	....	....	3	3	1	....	....	....	....	....	....	....	1	....	....	2	....	....	....	....	....	....	....	....	....	....	1	....	....
Appearance	6	1.2	1	....	3	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Dissatisfied with work	20	4	6	6	3	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	1	1	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....
Dissatisfied with department	1	2	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Poor attitude in general	9	1.8	1	....	4	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	2	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Poor attitude toward work	26	5.2	6	1	2	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	13	....	1	....	....	....	....	....	....	....	....	....	1	....	....
Poor attitude toward authority	9	1.8	5	1	1	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

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the non-sales force were problem individuals presenting conditions that caused their department head to question their value as personnel risks to the store. Many of these individuals were actual liabilities. All of them were potential liabilities to the store.

It is not without considerable significance that a large mercantile organization should seek to establish a psychiatric agency, through which employees may be aided, and their separation from the store prevented. Of course, in the long run, it pays to cut down on turn-over, to save in employment, and to reduce the enormous job of training. But we have been impressed constantly with the fact that the business man sees the ethical side of this matter.

As time goes on, there has gradually come about an increasing stream of problem employees referred to us for study, advice and treatment. Table 1 throws some light upon the varied types of problems referred by department heads. And we have quoted in the column to the left, the common reasons as given by the department heads themselves for referring these individuals.

After several months of work on these cases, we find that 67 per cent of the 500 employees are still in the store, while 23 per cent have been laid off, partly through our own recommendations; 7.8 per cent have resigned; 2 per cent were pensioned; and 0.2 per cent are out on mutual aid.

Of the active cases, 40 per cent have been adjusted and furnish no longer a problem to their departments, and 44.7 per cent are still under treatment through our office.

If every other problem employee can be adjusted on his job while he is continuing at his work, then there is not only an enormous saving in employment, training, and placement of new people, but (and this is of much greater significance) the individual problem worker becomes of some satisfaction to himself as well as to others, an asset not only to business, but to the community at large. At the same time, industry and business assume an obligation long neglected for the prevention of work failures which later result in social problems that become the burden of the general community.

There can be no denying the fact that it pays in time, money and energy to have each and every one of these problem employees adequately studied before wasting so much energy on transfers and further training. Every department in any great organization contains its problem employees. And every department head has tried various methods of dealing with such employees: sometimes fatherly lectures, sometimes further training, sometimes transfers from one part of the institution to another, and finally, lay-off.

The old-time doctor used to treat his cases without much serious effort at examination and diagnosis. The empirical methods involved in relieving symptoms were the principles he followed. But modern medical science has supplanted this method with the fundamental principle of careful inquiry and diagnosis before treatment.

When we begin routinely to do this in personnel work, arriving first at a diagnosis of the human factors involved in work failure, a thorough study of the individual himself and his abilities and adaptabilities, before undertaking to apply treatment facilities, then, and not until then, shall we have entered into a period of prevention of work failures.

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Cambridge Congress of the I. R. I.

International Industrial Relations Association

By Louise C. Odencrantz, *New York*

This description of the Cambridge Congress of the International Industrial Relations Association is supplied by one who is familiar with both social and industrial aspects of personnel problems. Miss Odencrantz is Director of the Employment Center for the Handicapped in New York.

"TRANSLATIONS, please," is a phrase often heard at any international congress, whatever the subject of discussion. As you look about you at your fellow conferees who have come together from all over the world, with differences not alone in language, but in ideas, social customs, and ways of living, you are impressed with a deeper significance of the phrase; for we need not a translation of mere words, but of the actual thoughts, motives, philosophies, attitudes, and experiences that lie back of them. You realize the tremendous opportunity that only such meetings can open up to us for more essential knowledge about each other and a better mutual understanding.

This thought came frequently to my mind at the recent meetings of the Congress of the International Industrial Relations Association held at Girton College, Cambridge, England from June 27 to July 2. About 150 men and women had assembled from twenty different countries,—some from as far away as Japan and India. They came to discuss *Fundamental Relationships between All Sections of the Industrial Community;* but one was aware of a conscious desire of all those participating for an interpretation, through personal acquaintanceship and informal friendly contacts as well as lectures and reports, of each other's ideas and experiences. As some one remarked at the conference, "A report from a country somehow has quite a different significance when it is read to you by some one from that country instead of reading it yourself."

PURPOSE OF THE I. R. I.

This Congress was the third international conference which has been held to discuss human relationships in industry. In 1922 a meeting of a group of persons in France resulted in the formation of the International Industrial Relations Association, known more generally as the "I. R. I." The first Congress was held in 1925 in Holland, with members present from 18 nations. The aim of the Associa-

tion is to study and promote such principles and methods as tend to develop satisfactory human relations and conditions in industry. Its membership is open to all who are engaged in industry or who are occupied in work of scientific research or social significance bearing on industry. "The method of work is to bring together for conference and study those who are engaged in some aspect of industrial life, as wage-earners, as managers, or as promoters of social welfare or students of its problems, and to give them an opportunity to think together, and out of their diverse experiences to find the common elements."

The advantage of providing such a meeting place for all groups showed up repeatedly in the discussions. Employers and workers alike added from their own angle of experience and those of their fellow workers engaged in production, while industrial psychologists, engineers, factory inspectors, vocational counsellors, and industrial research workers contributed their observations and experimental results.

REPORTS ON INDUSTRIAL CONDITIONS

Following the procedure at the two earlier conferences, the Congress opened with brief reports on the industrial situation from each country. This was greatly facilitated by the preparation of these reports in advance so that printed copies were available at the openings of the Congress. A councillor from each country also gave an oral statement, usually explaining certain parts of the written report. These reports indicated in general the extent to which fundamental relationships in industry are being affected in each country by such factors as: (1) coöperation within and between the various groups in industry, (2) education and training for all groups, (3) industrial welfare work, including personnel and employment management, (4) scientific management, (5) industrial psychology, and (6) vocational guidance.[1]

Varying emphasis is laid upon different aspects in the reports from various countries, owing to the world-wide differences in social and economic development and the general industrial situation. For instance, the report from Great Britain gives a comprehensive statement of present tendencies in education as applied to industry and commerce and the progress of industrial psychology in that country. The report from Belgium stresses the methods of coöperation between employers and employees, such as collective agreements and official commissions, while Ireland, with its recent entry into the industrial field is concerned with the development and organization of new industries and the problems arising out of them. The report from the United States was prepared in more detail, with special reports as follows: *Scientific Management*, by Dr. H. S. Person; *Industrial Psychology*, by Dr. W. V. Bingham; *Education and Industry*, by Dr. C. R. Mann; *Personnel Administration*, by Dr. W. J. Donald and Edith King Donald; *New Develop-*

[1] This preliminary report can be obtained from the Secretariat, I. R. I., Javastraat 66, The Hague, Holland and from Room 600, Russell Sage Foundation, New York.

ments in the Labor Movement, by Florence C. Thorne; and *Social and Economic Background*, by Glenn A. Bowers.

A report on *Native Labor* by Miss Mabel Byrd of the International Labour Office indicated the kind of information that this Office is collecting about enforced labor, especially in Africa and elsewhere. She described conditions which some may have assumed no longer existed any where in the world,—subtle methods of virtual enslavement. The report also touched upon the difficult relationships between white and black free labor in Africa, and the effects of detribalization, not always in the interests of civilization but of encroaching industry.

To attempt to give a summary of these reports would serve to defeat one of the main purposes of the Congress,—namely to help us to get away from the generalizations in which we so often sum up the characteristics of a country and its people. Their greatest value lies in the *concrete* picture given to us by a person or a group from the country itself. The volume of proceedings is unique in bringing together as it does comparable information from various countries so that it offers much suggestive material for research. In making comparisons, one is impressed with the extent to which the particular conditions of a country modify and influence the development and application of a general principle to meet its own needs. On the other hand, one is equally impressed with certain universal tendencies, both in practice and in basic principles of industrial relations. Finally, the most encouraging feature of all is the spirit underlying all the reports, which reveals a faith and a striving in every country for conditions which will result in more satisfactory relationships in industry.

DISCUSSIONS OF VARIOUS ASPECTS OF INDUSTRIAL RELATIONSHIPS

The Collective Idea, was the subject chosen for the opening lecture of the Congress. The Rt. Hon. Lord Askwith, K. C. B. described some of his experiences as arbitrator in seeking agreement between groups in industry. With the shift from individualism towards collectivism,—group thinking and group action,—any consideration of fundamental relationships in industry must take into account the ways in which these occur and are influenced. In fact, throughout the meetings repeated emphasis was laid upon the importance of examining, not so much group action and what is done, as why it is done. As Miss Mary Van Kleeck of the Russell Sage Foundation formulated it, "the need is to analyze these situations and find out the realities behind them; the need is to find out what is the point of view of the working people, why these things affect them as they do, what are the conditions in different industries which give rise to quite different problems and quite different attitudes, with traditional social heritage, and finally, by what methods of investigation we can arrive at an understanding of the problems of relationships.

"Behind all group conflicts is the inevitable influence of ideas upon conduct arising from the environment,—the ideas which a man formulates to defend the reasonableness of

his own attitude toward industry. These are not merely the ideas of individuals; but the group, having a common experience, is drawn together; and whenever the group is conscious of its common interests and environment there you get the organized group which becomes then a fact. There is a curious desire often displayed by those who have greater power in the economic order to recognize only the individual and to explain the group as irrational and the result of the actions of some unreasonable leader who is influencing the group, so that if we could somehow dispose of those leaders we could deal in a sensible way with our own employees one by one, and there would not be the difficulties due to the formation of large groups. . . . The group is after all not an invention of somebody's imagination. We have to recognize that modern life is too complicated for the individual acting alone; that man is dwarfed but men are exalted by the necessity and the opportunity for coöperation."

Dr. C. Delisle Burns of the University of Glasgow spoke on *Groups in Industry; their origin, characteristics, and activities.* How are the groupings actually found in industry today affecting the integrity of the individual? Granted that groups are an inevitable concomitant of large scale industry, how can the groups be related to one another so as to become a means of preserving the individual and enlarging his opportunity for a satisfactory life? Mr. Burns pointed out that factory life gives people a sense of coöperative power, but at the same time diminishes the feeling of individual power. Again, repetitive work in purely mechanical jobs, where the mind is free and where conversation is possible, tends to increase the feeling of fellowship and collective sense. "It must be remembered that the worker's mind is largely formed in the factory while the manager's mind is formed at lunch." Factory life promotes association and coöperation, and as a result of this need for fellowship, unions have developed. "Trade union is the expression of group life in occupation."

Large scale production influences the life of the individual in other ways. Its wage system brings greater uncertainty of tenure of employment and uncertainty of income, which in turn affect the worker's whole attitude toward life, necessitating a short view on life and short time planning. Mr. Burns emphasized that workers on the whole are more concerned with regular wages than with high wages, and that uncertainty of income has a detrimental influence upon the worker of today. It helps to engender a feeling of dwarfing on the part of the individual, making him conscious that he is one of a group, an "item on the pay sheet," that can be dispensed with at any time. On account of this shift from the individual into a group, Mr. Burns urged the importance of studying attitudes in present industrial life from a psychological point of view that a sound basis of policies may be made.

The Contribution of the Social Sciences to Industrial Relationships was the subject of a symposium with Miss Mary Van Kleeck of the Russell Sage Foundation, New York, as chairman;

Dr. Frieda Wunderlich of the Berlin Bureau *für Sozialpolitik* outlined the contribution from sociology and economics; Dr. C. S. Myers, of the National Institute of Industrial Psychology, London, spoke on the contributions from psychology, and Mr. V. Branford on the interrelated sciences. The scientific method as used in the development of these social sciences as well as the results are important to the field of relationships in industry. It was pointed out that a close relationship must be maintained between research and reality. "Science without practice is empty; practice without science is blind," said Dr. Wunderlich. Science is necessary in industry. Since society and nature are subject to law, any interference with industry must be doomed to failure which is not in accord with fundamental laws,—technical, physical and social. As an illustration, Dr. Wunderlich pointed to the need of applying science to the problem of the "mechanical utilization of the worker,"—that it is not the social sciences but the technical sciences "which must find a way out of the condition endangering the culture of society,—the evils of monotonous work." Mr. Branford urged a closer interrelation of all sciences in the study of human relations in order to gain any real understanding of the human being as a whole, or of the community as a whole.

Scientific management came in for a considerable amount of spirited attention when a discussion was arranged of Dr. Person's statement on Scientific Management in the United States report. To quote the report, "Scientific management, says Taylor, is primarily a mental attitude toward work, and only secondarily a system of practices. The essence of scientific management consists in the application of certain broad principles, and the particular way in which these principles are applied is a matter of entirely subordinate detail." "Scientific Management by the utilization of investigation and experiment seeks to eliminate superficial variables, discover the laws of each managerial situation and through appropriate procedures to substitute these laws for personal authority and opinions. It aims to economize energies, secure maximum rewards, make self-expression and self-respect realizable in every task, and generally to promote human welfare through harmonious coöperation in livelihood activities."

In opening the discussion, Mr. Olzendam of the International Labour Office suggested that all discussions of "scientific management" and "rationalization" would be clarified if they were replaced by the term "elimination of waste,"—waste not alone in the production process but of social energy. Changes in methods always involve unemployment and a consequent need for adjustment. Far greater attention should be given to the development of organized unemployment insurance, for example, and labor exchanges, in order to minimize this waste. Such a problem of vocational adjustment lies both within the scope of the individual factory and the community.

Many of the problems of human relationships and conditions in industry must be solved as technical problems. The responsibility of man-

agement in this direction should be emphasized more positively. Through scientific management under the joint auspices of labor and employers it may be possible to protect wage-earners against the detrimental effects of mechanization and to give stability to industry.

A question was raised whether youth, under the present emphasis upon creative work in the newer education, will stand for the repressions of modern industry. Will there be a crash or will industry meet this new attitude?

The subject, *Relationships within the Industrial Establishment,* was discussed by Mr. R. M. Fox, of Ireland, author of *The Triumphant Machine;* Herr F. Lübbe, Chairman of the Works Council (employees), Siemens, Ltd., Berlin; Herr H. Mars, *Referent Arbeitswissenschaftliches Referat der Kammer für Arbeiter und Angestellte,* Vienna; and Mr. A. L. Colman, Director of Messrs J. & J. Colman, Ltd., England. Mr. Fox urged the need of opportunity for workers not only to share in joint works' councils, but to meet independently as a group and form independent judgment, with freedom to consult trade union and other officials. Mr. Lübbe likewise emphasized that inasmuch as the policy within an individual factory must be wider than the single factory in its influence, its development should be consciously related to the rest of the industrial community, including trade unions.

Before outlining the personnel policies of J. & J. Colman, Ltd., (mustard manufacturers), Mr. Colman pointed out that a worker requires, for any measure of satisfaction, good wages, good working conditions, security of employment, and participation or direct interest in the business. Considerable attention has been given at his factory to try to meet these requirements, in coöperation with the works council and trade unions. Pension plans, "short time" employment fund, review of discharges, transfer in slack times, long time plans for repairs and construction in slack periods,—these are some of the measures that have helped to keep the labor turnover down to one per cent. He suggested that the next step should logically be an attempt to give more information to everybody as to the financial and administrative side of the business, but until a board is ready to "go the whole hog," nothing will be gained by giving partial information.

Public opinion in its relation to industrial matters, was the subject of a public session held in the Masonic Hall in Cambridge. Miss Kersten Hesselgren, the President of the Congress (chief woman factory inspector in Sweden and Member of the Upper House of Parliament) pointed out the extreme difficulties that practically all countries are facing in trying to solve the problems of industry, indicating serious maladjustment. "From the beginning there have always been men and women who have tried to find a way. And the solutions they have come to they have tried to bring to life by calling upon public opinion. The task of forming public opinion rests with all sections of industry, and therefore upon them all is the responsibility of the development of possible solutions to industrial problems."

When Mr. Paul U. Kellogg, Editor of *The Survey*, was introduced, he remarked that he would have been scared if that room had been filled with Cambridge people, because to a Middle-West American, Cambridge seemed very near the throne. In speaking of public opinion, he dealt with the part that it plays in the slow spread of its influence upon human relationships in industry. "Public opinion depends upon understanding, and understanding depends upon communication. But in industrial progressiveness, there are often certain barriers which have to be overcome. . . . . The first barrier is the over-exuberance in the growth of the means of communication. We have mass-suggestion, the radio, the newspapers, and various schemes whereby people tend to move and act together. Then there is the slow spread of ideas as compared with mechanical ideas." Another barrier he had observed was that in their specializing, they tended to develop in their modern life certain water-tight compartments. Their specializing had given them great advantages in life, but it had also given them very large handicaps. There were tremendous gaps in our modern life between the prosperous people who made decisions and the unprosperous groups upon which the results of these decisions fell. Turning from the barriers to the assets, Mr. Kellogg said that the spread of elementary education was "big dynamite" in the world today. Then there were the tremendous mechanical changes and the spread of the scientific management of the affairs of the workers. "It is in the workshop that we must look for that understanding that would make for world advancement and happiness."

ROUND TABLE DISCUSSIONS AND INNOVATIONS

A novel feature for an international congress was the inclusion of a series of round table discussions. They covered the following subjects:

(1) *Education and Training for all Groups in Industry*, with three sessions on the topics: (*a*) is the worker's job the center of his life as a human being? (*b*) the nature of the educational training to equip foremen and supervisors, (*c*) the relationship of industry to contemporary civilization.

(2) *Personnel and Employment Management*, with sessions on: (*a*) leadership in industry and the choice of executives, (*b*) policies in employment and discharge, (*c*) the form coördination should take or the place of personnel work in the organization.

(3) *Research in Industrial Relations*, covering the topics: (*a*) what are the problems of method in research in industrial relations? and (*b*) what are the most pressing problems requiring research in the immediate future?

As the three discussion groups met simultaneously, the conference members were much torn to make a choice when they wanted to attend all three, but the informal and frank discussions which grew out of the small meetings showed the value of the arrangement and led to the recommendation that the Summer School which the I. R. I. holds yearly should be organized in this way, with "openers" limited to fifteen or twenty minutes.

Some lively discussion was stirred up in the question, *Is the worker's job the center of his life as a human being?* What is the center of a person's life? Some defined it as follows: "What-

ever gives most satisfaction may be considered the center of his life." Another thought that, "As industry is organized at present, a workman has to find his satisfactions mainly outside his job." Again it was pointed out that even in a very simple job, a man might find satisfaction, as for example a labeler who had satisfaction in being the best labeler in his department. Another pointed out that the possession of skill is a primary satisfaction because it gives a feeling of power, of security.

The discussion on *Education in Industry* showed the difficulties of laying down any general principles. Someone protested that much that now goes under the name of "training," is open to criticism because it does not take into full consideration various aspects of the worker's life or his relations to industry as a whole. Education should help to emphasize and to promote the larger creative purpose of industry. Another line of discussion was the need for more general education. "We must obviate lines of class distinction and overcome the inferiority complex of the workers by making more general cultural education of children up to sixteen years." "The workers have not had the same chance to learn what is in books that has been possible to those who have gone to universities, and yet the real source of culture and love of beauty in any society is to be found in the great mass of the people and in their work. If modern industry submerges the producers and workers, there is no possible hope for culture and beauty in modern society, because art and beauty cannot be developed by a few people removed from the realities of the task called work. In the workers' education movement we have emerging the opportunity for those who are not of the workers to be in touch with them, to understand their reaction to life and to our social relationships. Workers' education will make articulate the experience and philosophy of the wage-earning group."

The discussion on *Research in Industrial Relations* emphasized the place of research in industry as a need, not a luxury. Several phases of industry require immediate study, not alone to discover what conditions actually are, but also to determine what elements in industry are the basic factors in causing them and by what means these may be influenced. This requires both a study of the broader or social terms of industrial life and an analysis of the technical problems of management.

RESOLUTIONS PROPOSED

As evidence of the keen interest provoked at the round table discussions are the following resolutions which grew out of them.

"Under sound industrial leadership every individual strives to a common end to the utmost of his ability; and the decisions of Direction issue as the collective judgment of all concerned. Such a situation will exist where:

"(*a*) Each individual in the enterprise understands its purpose, its methods, and the significance of his own personal contribution;

"(*b*) It is commonly recognized that remuneration, working environment, and security are the best compatible with the attainment of that purpose;

"(*c*) Individual effort is sustained by

the conviction that the Management is free from ulterior motives and seeks to secure opportunity for each and justice for all."

Those participating in the round table on *Policies in Employment and Discharge* proposed that the I. R. I. make available "information about existing policies and practices, in various countries, in relation to discharge of employees, such as time of notification on the part of employer and employee, participation of employees in matters of discharge, etc., whether these policies and practices are based upon custom, collective agreement or law."

The discussion on the most pressing problems in industrial relations requiring research brought out the need for international planning of such studies, or at least centralization of information about studies that are being carried on in different countries on the same subject.

The Congress expressed its interest and offered its coöperation to the International Labour Office in carrying out the resolution adopted at its recent conference at Geneva in June, providing for observation of new developments in collaboration between employers and employed in certain countries, which have resulted in an improvement in the level of real wages and working conditions, and also in greater and more economical production for the benefit alike of employers, employed and the community as a whole.

Through well planned field trips during the Congress to factories, to the psychological laboratories in Cambridge and other organizations, the members were able to see practical examples of things they had been discussing.

The difficult task of summarizing the lectures and discussions in order to "formulate possible statements expressing the ideas of the Congress" was undertaken by Miss Mary Van Kleeck of the Russell Sage Foundation. Any attempt to summarize a summary of this Congress would seem to me to be impossible. My answer is the same as that of Dr. Frau Böhme who was asked to render a German translation after she had listened to the statement given in English. "I cannot. It would sound like someone trying to pick out a piece of music with one finger on a piano after it has been rendered by an orchestra."

WAS THE CONGRESS WORTH WHILE?

Was it worth while to attend the Congress? The facts, it is true, you can get from printed reports, but there is a significance which comes when the message is brought by word of mouth. There is opportunity to know more about each other and what we are driving at, a knowledge which is conveyed not alone in words but in spirit. There is an opportunity for mutual appreciation which comes only through the reality of personal contact and spiritual understanding. There is opportunity to think together, to formulate objectives. "If our objective can be defined it can be converted into action. If there is no defined objective, there can be no worth while action." There comes the inspiration of knowing that others are at work on problems similar to yours.

In providing a meeting ground for

all the different groups concerned with fundamental relationships in industry, —through its triennial congresses, annual summer schools and the informal contacts that makes it possible, —the I. R. I. may render a real service towards a better mutual understanding between nations. The entire conference emphasized the inter-relation between countries in their economic and industrial life. A conscious isolation or political barriers cannot erase the dependence or influence of one country upon another.

(Manuscript submitted July 25, 1928.)

Book Reviews

HARVARD BUSINESS REPORTS

VOLUME 4

CASES ON LABOR RELATIONS

By John W. Riegel and Others, Harvard School of Business. Chicago: A. W. Shaw Company, 1927. Pp. 559

REVIEWED BY J. H. VERTREES

One of the most hopeful signs for the future of labor relations is the willingness of so many employers to experiment with new methods or to adapt old ones to newly recognized needs. That new and continuously changing conditions have created new problems in labor relations, requiring radically different methods, is generally recognized.

An outstanding weakness in the present situation, however, lies in the enormous waste of effort represented by blind or improperly guided experiments and in the general inadequacy of reports of experiments. Too frequently the "prescription" that cured an apparently similar case of unsatisfactory labor conditions is diluted and administered before the physician is called to find why the victim is worse. If, on the other hand, the patient improves, the "prescription" is likely to be passed on without analysis.

Whether labor relations in the future are to constitute the "neck of the bottle" in industrial progress, or whether industrial good-will and consequent release of the full energy and intelligence of our man-power is to furnish the driving force, depends largely upon the extent to which our vast resources of experience are made available to the average and smaller industrial concerns.

In this volume are presented 73 cases (many of them involving a combination of problems) on labor relations from 68 widely distributed companies. A wide variety of industries is also represented, the number of employees ranging from a few hundred in a single unit company to representative large corporations having many plants.

The problems involved cover practically the entire range of familiar personnel problems. The sequence of cases is based, as stated in the author's foreword, on "current operating issues," "questions regarding the channels through which such issues are negotiated, and the status collectively of employers and of employees," and "problems arising from those relations between employer and employee which are superimposed upon the labor relationship."

Such problems as those involved in hiring, promotion, reduction or increase of force, training, wage incentives, profit sharing, sale of stock to employees, pensions, employee representation, labor union agreements, housing, and other welfare plans are given prominence.

Each case begins with a careful summary followed by a statement of all available facts relative to the problem or problems. The author's commentary, based on the facts and an unquestionably keen insight into the mental attitudes of those involved, follows.

The author has wisely included as commentators, on a number of highly specialized cases, men especially qualified for their several tasks.

The executive looking for a "prescription" for his problems in labor relations will not find it in this volume or any other. If he seeks, however, a firmer basis for analysis or methods of approach to his problems, he may find them in this volume.

The accumulation, organization, and interpretation of such problems as are presented in this volume and their wide distribution will serve well in the conservation of our experiments in labor relations.

CLERICAL SALARIES IN THE UNITED STATES, 1926

By the National Industrial Conference Board. New York: N. I. C. B., 1926. Pp. 59

REVIEWED BY MARION A. BILLS

For this study the authors made a survey of 427 companies employing 27,376 office workers. These companies were located in 18 cities, distributed throughout the United States,—both Seattle and New York, the extremes, being included. In each city an effort was made to include a sufficiently large number of people to give a fair average.

Office work was classified into 20 groups, the lowest group having the title of mail clerk and the highest of chief clerk. The salaries were likewise kept separate for men and women. The salaries of each group were carefully analyzed by wage levels, the number of that occupation in each level being shown; for example, with ledger clerks we see that out of 515 males, six received a salary between $10 and $15, 39 received salaries between $15 and $20, and so on. With women we find that one out of 219 ledger clerks received a salary between $10 and $15, 46 between $15 and $20, and so on until 14 received a salary over $40. We are also given the medium salary for each type of occupation for both men and women.

No detailed comparison between cities is given, as the different types of occupations reported from the various cities did not seem to make this feasible.

The greatest obstacle to a study of this kind, and one which the authors have fully recognized, is that of job title. At the present time in clerical work job titles do not as definitely define the job as in the trades. The fact that this was a factor is probably illustrated in the range of salaries for those jobs where there is a fairly definite meaning to the title and those jobs where the meaning is vague; for example, 50 per cent of the file clerks, a fairly definite title, receive a salary between $15 and $21 a week, while 50 per cent of the payroll clerks, a more indefinite term, receive between $20 and $33, almost twice the range.

Although this indefiniteness of title is a serious drawback in the study, the final results will, we believe, prove exceedingly useful to anyone interested in the wages of clerical employees. A few definite conclusions were reached. A considerably larger number of women are employed in clerical work than men. The medium salary of the women is less than that of the men. There are no very striking differences between the per cent of men and women employees in the various cities nor, when proper adjustments are made, in the salaries being paid in the various cities. The approximate average salary for clerical workers would seem to be $25 a week. This is slightly less than the average weekly earning of manual workers in the 25 industries studied by the Conference Board. This comparison is probably not fair as recognized by the authors, in that the work of the office worker is more permanent than that of the manual laborer.

A NEW METHOD OF MENTAL TESTING

By J. J. Strasheim. Baltimore: Warwick and York, 1926. Pp. 158

REVIEWED BY FRED TELFORD

Few persons would infer from the title *A New Method of Mental Testing* that Dr. Strasheim purports to set forth a definite conception of "abstract intelligence," a method of measuring the amount of it possessed by "young children," and the application of the results to certain types of educational work. Yet such is the case.

Dr. Strasheim points out quite properly that there seems to be no clear conception of the meaning of "intelligence." Unfortunately, he does little or nothing to remedy this lack. In a chapter consisting of three pages, he purports to summarize the theory enunciated by C. Spearman in his book "The Nature of 'Intelligence' and the Principles of Cognition" but in no place defines clearly and precisely what this conception is. That he regards the matter as definitely disposed of, however, is clearly indicated by the opening sentence of the next chapter: "Having thus cleared the way by fixing a definite meaning upon the term 'intelligence,' we must next proceed to ask how it may best be tested." It is doubtful whether many readers will have a very clear conception of what he means by the term "intelligence" or that any large proportion of those who do get his meaning will be any more willing to accept that conception than they are other conceptions which have been advanced and found faulty.

Dr. Strasheim's measurements of the thing he calls "intelligence" are not likely to be very convincing to those who have delved in this field. The results are based upon 30 children classed as "bright" and "dull" respectively by their teachers, "who were asked to choose only those of whom they were quite certain." The grouping of these 30 children was as follows:

2 "bright" testees under five years (1 boy and 1 girl)
3 "bright" testees between five and six (2 girls and 1 boy)
8 "bright" testees between six and seven (4 girls and 4 boys)
4 "dull" testees between six and seven (2 girls and 2 boys)
6 "dull" testees between eight and nine (4 boys and 2 girls)
4 "bright" testees between eight and nine (2 boys and 2 girls)
3 "dull" testees about ten years (all girls).

The tests proposed to measure "intelligence" consist of questions dealing with situations of increasing complexity, of "learning" tests, and of cancellation tests; all of the material is so selected as to measure what Dr. Strasheim calls "higher level relations." The material in the main is stimulating as to content and point of view, but the results are not likely to be very convincing to those accustomed to the statistical analysis of test results, both because of the small number of testees and the method of selecting them, the scantiness of the test material, the following of the case method rather than the usual statistical methods involving the calculation of correlations, and the absence of any satisfactory criterion. Those who concern themselves with the definition and measurement of abstract intelligence will find the book stimulating but after reading it are more than likely to hold to any point of view they may have had already and to continue to use the tests of abstract intelligence which they have used in the past, rather than to adopt those worked out by Dr. Strasheim.

THE IDEA OF SOCIAL JUSTICE

By Charles W. Pipkin. New York: The Macmillan Company, 1927. Pp. 595

REVIEWED BY JOHN B. ANDREWS

Mr. Pipkin is convinced that there exists a "will for good society." This "will" has caused an "insistence on a juster distribution of the good things of life" and "has helped to free good men for better service to their fellow men." This is his conclusion from a study of labor legislation in France and England between 1900 and 1926.

He supplies well documented and carefully gathered material on social legislation in these two countries. The volume is primarily a chronical of legislative enactment during the first quarter of the present century which shows how protective legislation has been carried forward until it includes in both countries nearly all the problems concerning labor and living conditions of working people,—for example old age pensions, health insurance, housing, accident insurance, mine regulation, and minimum wage. The struggle to pass and extend these protective measures is well described with citations largely drawn from the parliamentary documents and committee reports.

But the special student of social legislation may be disappointed in his failure to find in Mr. Pipkin's work an adequate picture of how the various administrative techniques pertaining to these protective enactments have functioned. The author deals with provisions for administration, but deals very little with the actual working out of these provisions,—certainly a highly important problem in a discussion of "social justice."

Nor is a striking comparison made between developments in England and France. Differences, of course, cannot fail to exist. But what are the environmental factors, aside from characteristics of the respective labor movements, which account for these differences? In Mr. Pipkin's faith in the existence of an interest "will" for a "good society" he has rested content and has failed to search for some of the more objective and behavioristic phenomena.

THE MENTAL LIFE

By Christian A. Ruckmick. New York: Longmans, Green and Company, 1928. Pp. 253

REVIEWED BY ORDWAY TEAD

Professor Ruckmick has admittedly set out to fulfill only one special demand in his introductory psychology. He explains that it is for use in summer sessions, normal schools, and as an outline guide or syllabus to be used in connection with a longer and more thorough course. It seems to me that it succeeds better as a working syllabus than as an abbreviated text. The student covering this material without any additional background would hardly secure a vital comprehension of even the elements of the subject. From the point of view of its independent use by general readers, the book does not seem to be particularly serviceable, despite the fact that its scholarship is thorough and modern.

New Books

ECONOMICS

HAYES, HARRY GORDON. *Our Economic System.* New York: Henry & Co., 1928. 586 p. $3.00.

EDUCATION

AYER, FRED CARLETON, AND BARR, ARVIL S. *The Organization of Supervision; an Analysis of the Organization and Administration of Supervision in City School Systems.* New York: D. Appleton & Co., 1928. 415 p. $2.25.

MAGUIRE, EDWARD RANDALL. *The Group-study Plan; a Teaching Technic Based on Pupil Participation.* New York: Chas. Scribner's Sons, 1928. 221 p. $1.80.

MONROE, WALTER S., AND HERRIOTT, M. E. *Reconstruction of the Secondary School Curriculum; its Meaning and Trends.* Urbana, Ill., University of Illinois, 1928. 120 p. 50¢.

NATIONAL EDUCATIONAL ASSOCIATION OF THE UNITED STATES. *The College of Tomorrow; its Relation to the High School and to Life.* Washington, D. C., Author, 1928. 24 p. Apply.

ROBERTSON, DAVID ALLAN, ED. *American Universities and Colleges.* New York: Chas. Scribner's Sons, 1928. 896 p. $2.50.

ROBINSON, WILLIAM MCKINLEY. *Preparation of Teachers.* Washington, D. C.: Government Printing Office, Superintendent of Documents, 1927. 34 p. 10¢.

WYNNE, JOHN P. *Principles of Educational Method.* New York: Globe Book Co., 1928. 304 p. $1.60.

INDUSTRY

AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE. *Standards in Industry;* ed. by Richard H. Lansburgh. Phil., Author, 3622 Locust St., 1928. 290 p. $2.50; pap. $2.00.

AMERICAN ENGINEERING COUNCIL. *Safety and Production.* New York: Harper & Bros., 1928. 414 p. $5.00.

DAVIS, RALPH CURRIER. *The Principles of Factory Organization and Management.* New York: Harper & Bros., 1928. 470 p. $5.00.

MOON, PARKER THOMAS, ED. *Fact-finding in Labor Disputes; a Series of Addresses and Papers Presented at the Semi-annual Meeting of the Academy of Political Science.* New York: Academy of Political Science, Columbia University, 1928. 206 p. $2.50.

NYSTROM, PAUL HENRY, COMP. *Bibliography of Retailing; a Selected List of Books, Pamphlets and Periodicals.* New York: Columbia University Press, 1928. 87 p. $2.50.

PERLMAN, SELIG. *A Theory of the Labor Movement.* New York: Macmillan Co., 1928. 333 p. $2.25.

U. S. FEDERAL BOARD FOR VOCATIONAL EDUCATION. *The Training of Foreman Conference Leaders; Suggestions as to Methods to be Followed and Types of Subject Matter Recommended by a Committee of Experienced Conference Leaders.* Washington, D. C.: Government Printing Office, Superintendent of Documents, 1928. 129 p. 20¢.

PSYCHOLOGY

ARLITT, ADA HART. *Psychology of Infancy and Early Childhood.* New York: McGraw-Hill Book Co., 1928. 227 p. $2.00.

BRETT, GEORGE SIDNEY. *Psychology Ancient and Modern.* New York: Longmans, Green & Co., 1928. 173 p. $1.75.

CHASSELL, JOSEPH OLIN. *The Experience Variables: a Study of the Variable Factors in the Experience Contributing to the Formation of Personality.* Rochester, N. Y.: Author, University of Rochester Medical School, 1928. no p. 75¢.

COOPER, MABEL LEE. *Seven Psychological Portraits; a Handbook for Parents and Teachers.* Milwaukee: Morehouse Publishing Co., 1928. 193 p. $2.00.

ELLIS, ROBERT SIDNEY. *The Psychology of Individual Differences.* New York: D. Appleton & Co., 1928. 556 p. $3.50.

GARNETT, A. CAMPBELL. *Instinct and Personality.* New York: Dodd, Mead & Co., 1928. 218 p. $3.00.

KELLEY, TRUMAN LEE. *Crossroads in the Mind of Man; a Study of Differentiable*

Mental Abilities. Stanford University, Calif.: Stanford University Press, 1928. 245 p. $4.00.

MARKEY, JOHN F. *The Symbolic Process and Its Integration in Children; a Study in Social Psychology.* New York: Harcourt, Brace & Co., 1928. 204 p. $3.50.

SANDIFORD, PETER. *Educational Psychology; an Objective Study.* New York: Longmans, Green & Co., 1928. 425 p. $3.50.

SEASHORE, CARL E. *Elementary Psychology; an Outline of a Course by the Project Method.* Iowa City, Ia.: University of Iowa, 1928. no. p. 25¢.

SYMONDS, PERCIVAL MALLON. *The Nature of Conduct.* New York: Macmillan Co., 1928. 357 p. $1.90.

THORNDIKE, EDWARD LEE, AND OTHERS. *Adult Learning.* New York: Macmillan Co., 1928. 345 p. $3.00; $2.25.

TILNEY, FREDERICK. *The Brain from Ape to Man.* New York: P. B. Hoeber, 1928. 1162 p. $25.00.

News Notes

PERSONNEL RESEARCH FEDERATION

Annual Conference of Personnel Research Federation

The program for the Annual Fall Conference of the Personnel Research Federation is being prepared by a committee of which Mr. T. M. Stokes, Personnel Director of Colgate and Company, is chairman.

The purpose of the program is to help in carrying out the object for which the Personnel Research Federation was created. This, in the legal phraseology of its Charter, is "the furtherance of personnel research, to wit: the scientific study of man in relation to his occupations and his education therefor; and the diffusion of knowledge concerning this relation."

Scientific Studies of Workers, Supervisors, and Their Work will be one feature of this meeting. Already reports of illuminating researches made in factories, mines, stores, and offices have been offered for presentation.

One outcome of the reading and discussion of these reports should be a better understanding of the work requirements of contemporary industry on the part of supervisors, industrial engineers, employment managers, educators, and vocational counsellors. It should lead also to a redefinition of outstanding problems of individual and social psychology, brought into prominence as a result of mass production and minute division of labor, with resulting tendencies toward repetitive processes, shorter hours, better wages, demand for highly specialized non-transferable skills, and decreased need of mere physical strength in the worker.

Conditions Affecting Individual Output is a related topic which brings forward not only considerations of illumination, ventilation, rest-periods, arrangement of work, and financial incentives in offices and shops, but also such influences as susceptibility to fatigue, monotony, fear of unemployment, group morale, and the confidence which the worker has in the management. *How to Deserve Employee Good-will* is one broad topic which has been proposed, a topic which cuts deeply beneath the mere adoption of novel schemes of industrial relations or other devices of management.

One session will be given over to such topics as *The Worker and the Time-Study Man, How to Secure Real Coöperation of the Worker in Time Studies, The Worker and the Management, The Worker's Sources of Satisfaction in his Work.*

Next Steps in Research in Industrial Psychology and Industrial Relations is a theme on which light will be thrown from several angles. One of these will be through a discussion of the facts brought forward in Dr. Otto Lipmann's challenging paper in the August PERSONNEL JOURNAL, on *The Human Factor in Production*, dealing with recent changes in the worker's share in determining output. It is expected that echoes of two recent international congresses will also serve to clarify these problems of the worker in modern industry. One is the Utrecht Congress of Technopsychology which Dr. Viteles will describe; the other, the Cambridge Conference of the I. R. I., (International Industrial Relations Association), reported in this issue of the PERSONNEL JOURNAL. A special luncheon meeting on Friday November 30 will be devoted to *Personnel Research in Europe and America.*

Provision will be made for small informal conferences of members interested in special topics on Friday afternoon, after a short general session. Friday evening will be kept free for recreation. On Saturday forenoon the presentation of research reports and special papers will be continued, and there will be opportunity for inspection of the exhibits and personal exchange of experiences.

Full details will be available in the next Service Bulletin, to be obtained on request about November 10 from the office of the Personnel Research Federation, 29 West Thirty-ninth Street, New York.

The Annual Conference of the Personnel Research Federation last year brought together 225 men and women with a common interest in live problems of vocational adjustment. It is planned to make this year's conference also a notable assembly of personnel executives, educators, engineers, and scientists, each aiming toward the increase of life's satisfactions and rewards through better understanding of workers and their work.

Activities of Member Organizations

Brown University

Personnel Work in The Women's College

Miss Eva A. Mooar, Director of Admissions and Personnel at the *Women's College* in *Brown University*, has submitted the following report on college personnel activities for the past year.

The Personnel Department of *The Women's College* in *Brown University*, as it is now organized, may be said to include the following divisions:

I. Admission. In 1927, the admission work, previously done for the women, as for the men, by the University, was divided in such a way that the admission of the women was given over to the Personnel Office of The Women's College to be administered in accordance with the general policy of the University, but with an opportunity for greater selectiveness. The admission work, then, as an integral part of the Personnel Office, has, at the start, been composed of the necessary correspondence with prospective applicants, the interviewing of as many applicants as possible, the selection and admission of a predetermined number of properly qualified girls, and the giving of information about other colleges and training schools and of suggestions about training or employment which might be considered by rejected candidates. Selection has been based primarily on the content and grade of the preparatory school record, sometimes further tested by examinations, and in cases of students in the lower fifths of their classes, from small schools and from schools sending few students to college, tested by a so-called proficiency examination in either English or Algebra. This purely academic record has been weighted with the statements about candidates received from principals and teachers of preparatory schools; with interviews in so far as possible designed to satisfy the interviewer as to the seriousness of purpose and the adaptability of the candidate; and in doubtful cases, with the results of the Scholastic Aptitude Test given by the College Entrance Examination Board or the Brown University Psychological Test or both. It has seemed logical that personnel work, which has as its aim the development of a more complete understanding between the college and its students, should begin when the student is making her first contact with the college.

II. Orientation of Freshmen. This year, in addition to the informal attempts at the orientation of individual students, and in addition to the interviews held with each Freshman, both at the time of her registration in September and at the end of the college year, the Personnel Department has administered a course of ten required lectures, called "Knowing and Living," given weekly during the second semester by speakers from the University, from Providence, and from out of town. Students were asked to hand in each week a one-page summary or criticism of the lecture of the preceding week. A part of the second interview with Freshmen was devoted to a discussion of these lectures as a whole.

III. Vocational Information. Vocational information has been given in the following ways:

(1) Interviews have been held with the members of each class. This year the Personnel Director has interviewed the Seniors, Juniors, and Freshmen, and the Dean has interviewed the Sophomores when they reached the point of selecting their concentration subjects. Little vocational information has been given to Freshmen, except in cases where it seemed es-

pecially to be needed. Much more information, naturally, was given to the members of the other classes.

(2) A conference with the members of the Senior class as a group was another method used for giving to girls soon to leave college certain information in regard to writing business letters, meeting prospective employers, finding agencies in strange cities, and so forth.

(3) A student vocational committee, composed of three Seniors, three Juniors, two Sophomores, and one Freshman, met regularly with the Personnel Director to discuss ways and means of getting vocational information to the student body. Under the auspices of this committee a few speakers came to the college to hold informal conferences with small groups of students. In addition, three Department Suppers were held, to which came the Faculty members of the Departments invited and those students who were interested. After each supper either the Head or several representatives of the Department discussed with the students those occupations to which concentration in that Department appeared to lead. Under the auspices of this committee, also, some information was given by way of the bulletin boards and the college weekly paper.

(4) Vocational information was given informally by a number of persons; some connected with the staff of the University, some alumnae of The Women's College, and some business and professional people in Providence and other cities, to whom students in search of information were directed.

IV. Placement. Another phase of the work of the Personnel Office is placement.

(1) There is the assistance given to students who are in need of financial aid or who wish to earn some money during their college course. Not only does the office stand ready to help the members of the staff of the University or The Women's College in finding students for clerical or other assistance, but it also has sought and found opportunities for students to do various kinds of work for residents of Providence. Some of this placement is of a type that gives the student employment steadily or at irregular intervals during the college year; some of it, on the other hand, gives the student employment for the whole or for part of the summer vacation.

(2) Along with this work for students is the placement of Seniors, alumnae, and former students. With the placement work should be mentioned the follow-up work done this year in coöperation with the Alumnae Office. An effort is made to keep the records of all those registered with the Bureau up to date, both for assistance in placement and for the purpose of securing vocational information.

V. Record Keeping and Research. In order that the Personnel Department may have as accurate and as full information as possible, not only for its own use, but also for the use of the Faculty and administrative officers when they wish, a cumulative record card is kept for each student, giving, among other material, data on personal traits, family situation, physical condition, and admission credits, and year by year, a record of college grades, with graphs showing the relation of a given student's record to the average of her class, a record of extra-curricular activities, interests, skills, financial situation, and vocational bent.

Further statistical work, based on the records of another year, has been done to add to the study, made in 1926–1927 by Miss Davidson and Dr. MacPhail, of the relationship between psychological test scores and college success, and the predictive value for college success of the psychological score and of high school rankings. A new piece of research undertaken this year has been a small problem dealing with the correlation between a grading made of the required Orientation lecture summaries handed in by Freshmen and their academic grades for the first semester.

VI. Training in Personnel Work. The Personnel Department has taken over, as one member of its staff, a recent graduate of The Women's College, who gives one-half of her time to the Personnel Office and one-half to graduate study for the Master's degree, with the understanding that this program will last for two years. It has been the purpose of the Department, in

doing this, to give her preliminary training for personnel work through supervised experience, instruction, suggested contacts with people, and suggested reading. As a means to this end, she has this year been given full charge of the student employment work. Conferences have been held with the Director from time to time for a discussion of problems connected with this work and of various other phases of personnel work. It is not expected that this training will turn out a full-fledged personnel worker, but it is hoped that it will give the recipient an understanding of the personnel point of view, a knowledge of certain techniques, and an increasing store of information that is fundamental in dealing with people, both students and people outside of college walls.

Coöperation with Other Departments. No summary of the activities of the Personnel Department of The Women's College in Brown University would be complete without mention of the splendid coördination of effort which is in large measure responsible for any group accomplishment. The Personnel Department works in close coöperation with the office of the Dean of The Women's College and is directly responsible to it. Not only does it also coöperate with the other members of the staff of The Women's College,—the Registrar, the Department of Physical Education, the College Psychiatrist, and so forth,—but it has the coöperation of the Faculty and of the Committee on Educational Advice and Direction at the University.

Plans for next year will not change the organization of the Department, in all probability, but they call for more emphasis on those parts of the program which seem to be most effective in the attainment of the objectives of the Department and for new experiments which may increase the effectiveness of its work.

New York University

Labor and Employment Management

Among the courses available at New York University this year is one on the personnel aspect of industrial management by Bennet F. Schauffler of the American Telephone and Telegraph Company.

This course, entitled *Labor and Employment Management*, consists of fifteen lectures, and is being given on Thursdays from 6:00 to 7:45 p.m.

U. S. Department of Labor

The Women's Bureau

Although the Act of Congress incorporating the Women's Bureau made a study of personnel activities affecting women workers a part of the Bureau's duty, no appropriation given the Bureau has ever been large enough to make such a study possible. The publications issued by the Bureau, however, make a most valuable addition to the personnel worker's library, in organizations where women are employed.

Bulletins. New bulletins that have recently been issued, or that are in press, include the following: *Industrial Accidents to Women in New Jersey, Ohio, and Wisconsin; The Development of Minimum-Wage Laws in the United States* (in press); *Women's Employment in Vegetable Canneries in Delaware; State Laws Affecting Working Women*; *The Employment of Women at Night* (in press); *The Effects of Labor Legislation on the Employment Opportunities of Women* (in press); *History of Labor Legislation for Women in Three States and Chronology of Labor Legislation for Women in the United States* (in press); *and Women Workers in Flint, Mich.* (in press).

Exhibits. Exhibit material loaned by the Bureau, can play an important part in an educational program, both for the employer and the employee, because of its graphic appeal. Several new exhibits are now available. (1) One is a motion picture entitled, *Within the Gates*, which takes the audience on a trip through the textile industry. The picture demonstrates how completely women have penetrated every kind of work. (2) Another is a group of seven "little theater" stage sets, with cut-out figures in color. These sets show women at work in agriculture, transportation, manufacturing, trade, the professions, clerical work, and domestic and personal service. (3) A third exhibit is a poster

series entitled, *The Woman Who Earns*, with the individual posters headed *How Long She Works, How Much She Earns, Keeping Her Work Place Comfortable*, and *Keeping Her Work Place Safe*. (4) A chart series gives the statistical story of the *Married Woman in Industry*, based on Census figures for 1920. (5) Two groups of statistical panels in chart form based on Bureau studies show lost time and labor turnover in 18 cotton mills, and industrial accidents to women in three states,—Wisconsin, Ohio, and New Jersey.

Bulletins will be sent free upon request, and exhibit material may be borrowed free upon payment of express charges to and from Washington.

MANUAL ABILITY?

Is general manual ability as distinct from mechanical intelligence an important factor in determining the rate of learning among machinist apprentices? Data which seem to point in this direction have been transmitted by Mr. A. C. Crockett of the Vocational Testing Department of the Detroit Public Schools Division of Trades and Part-time Education. These data are from the files of the apprentice supervisor at the Burroughs Adding Machine Company.

Piece-work production figures of twenty apprentices were kept over a period of eight weeks for each of four machine processes, namely, drill press, milling machine, external grinder, and hand screw machine. The apprentices' average production figures for the first four weeks correlate with those of the last four weeks as follows:

1. Drill press, +0.67
2. Milling machine, +0.35
3. External grinder, +0.63
4. Hand screw, +0.60

It will be noted that each of these machines is hand-operated except the milling machine, on which the correlation between initial and final output is much lower. Here improvement in output is due to close attention and promptness in stopping the machine as soon as a piece of work is finished, and quickness in putting in new work.

These figures are published to call attention to the fact that accumulation and analysis of such data, which doubtless rest in the files of many instructors, would in the end throw considerable light on the nature of the abilities demanded of young men in different kinds of machine operation.

FRANCE FOUNDS NATIONAL INSTITUTE OF VOCATIONAL GUIDANCE

The establishment at the Sorbonne of the *Institut National d'Orientation Professionnelle* provides France with a national center for research and training in vocational guidance. The announcement of courses and staff, recently received, states that the Institute is a center of instruction regarding all subjects related to psychology in its application to vocational selection and guidance. The Institute also encourages researches necessary to the development of scientific methods and to the control of their applications in employment, placement, and counselling.

Courses of instruction are given by a distinguished faculty in Physiology, Pathology, Psychology, Child Study, Economics, Industrial Management, and Organization of Guidance; and facilities are provided for observation and practice in vocational counselling bureaus.

MM. Fontègne, Laugier and Piéron are joint Directors of the Institute. M. J. Fontègne is *General Inspector of Technical Instruction*, and *Assistant Director of Instruction of the Seine;* M. H. Laugier is *Chief of Staff of the Sorbonne*, and *Director of the Laboratory of Physiology applied to Mental Hygiene;* and M. H. Piéron is *Professor in the College of France* and in the *Psychological Institute of the University of Paris*, and *Director of the Psychological Laboratory at the Sorbonne.*

The officers of the Administrative Council are as follows: *President*, M. Labbé; *Vice-presidents*, MM. Barrie, Gaillard, Luc, and Sellier; *General Secretary*, M. Fontègne; *Treasurer*, M. Oualid.

Further information concerning this important development in vocational guidance may be secured from Mlle. M. Lichtenberger, Secrétaire-archiviste, Institut National d'Orientation Professionnelle, Musée Pédagogique, 41 Rue Gay-Lussac, Paris.

AUSTRALIAN INSTITUTE OF INDUSTRIAL PSYCHOLOGY

Congratulations are extended to Australia on the successful completion of the first year of the Australian Institute of Industrial Psychology established at Sydney on September 20, 1927.

A report of activities during the first six months has been communicated by Dr. A. H. Martin, Psychologist of Sydney University and Director of the Institute.

"Since the inception of the Institute which is affiliated with and organised on similar lines to the National Institute in Great Britain, the following activities have been successfully carried out.

Guidance

"Over 139 cases of guidance have been treated. Of these, a number have been gratuitous in the line of demonstrations and most of the others at the rate of half fee, *viz.*, £1. 11. 6. While the majority of them have been straightforward cases of measurement and assessment of abilities, merely requiring direction or some adjustment, a number have involved temperamental factors. Some of these have been referred to Dr. W. Dawson, Professor of Psychiatry and hon. consultant to the Institute; but others merely required advice as to mental hygiene.

"One of the latter cases is eloquent as to the possibilities of this type of work. N—, aged twenty years, was referred to this Institute from a firm who 'found him useless.' He was engaged in office work but was so remiss as 'to lose papers and bungle even minor commissions.' Tests showed his undoubted high clerical capacity, and an analysis of his maladjustment was made. N— had arrived from a small Shetland village where he had been employed as a shipping clerk. Given a start in an office here, he was 'very green' and he became the butt of the employees of the office. He was hazed by this treatment to such an extent that 'though he knew people were pulling his leg, he felt mentally bound to follow up their suggestions.' Loss of papers was due to his dazed mental state, in fact a minor amnesia. The result of the tests and interview were tactfully conveyed to his manager, who on our recommendation gave him more responsible work, and quietly but effectively stopped the hazing. 'N— has risen to his responsibilities and in two months has proved his worth to the firm.'

"What is earnestly required for such work of guidance is the standardization of Australian tests and norms. Very little has been done so far except by students of the Department of Psychology of the Sydney University as additional work for their degrees. A staff of researchers is urgently required to extend the range of this work. Mr. Piddington, now attached to the Institute as Assistant Psychologist, is beginning to take up some of this work, but a research staff of one or more members is absolutely requisite if the work is to be extended on assured foundations.

Industrial Problems

"A firm of hardware merchants requested an investigation and suggestions for the improvement of their packing departments. After a careful survey, certain recommendations were made as to routing, *viz*:

(1) Type of bins or fixtures for goods
(2) Despatch of orders from departments
(3) Handling of orders in packing room
(4) Extra lifting power

As a result the system recommended by the Institute has been installed with marked satisfaction and success. The final adoption of the complete system awaits the installation of a goods conveyer, so that the method may be carried out in full. This work is now being carried into effect.

"A women's business college sought advice in reorganization. It comprised problems in lighting, seating, blackboards, types of tables and desks, and ventilation. Suggestions as to a college badge and recreation were also made. The recommendations have given great satisfaction. A series of ten lectures on psychology to the staff in connection with a new shorthand system is being given.

"Vocational selection tests for the work of 'fitting and matching veneers' in a

furniture factory were carried out early in the year. Out of fourteen tests administered, five were finally selected as diagnostic. These correlated very highly with two ratings of ability of the candidates. Owing to the factory having been damaged by fire, further work has been postponed pending the reconstruction and rebuilding. Later it is hoped to select veneer matchers by this means.

"For the propaganda work of the Institute, much work in the nature of public addresses has been carried out. Articles of interest in industrial psychology have been written for all the leading newspapers. Even so, far more publicity is essential for the success of the Institute."

I. R. I. CONGRESS

Election of Officers

Miss Odencrantz has given in this issue a vivid resumé of the proceedings of the Cambridge Congress of the International Industrial Relations Association (I. R. I.).

The officers of the Association elected for the ensuing three years are, PRESIDENT: C. H. van der Leeuw, *Partner, Messrs. de erven de Wed. J. van Nelle, Holland;* VICE-PRESIDENTS: Miss Mary van Kleeck, *Russell Sage Foundation, New York,* Miss M. L. Fleddérus, *Holland,* and Erich Lübbe, *Chairman of the Works' Council (employees), Siemens, Ltd., Berlin;* TREASURER: Charles E. Jacob; MANAGING DIRECTOR: Messrs. W. and R. Jacob and Co., *Ltd., Dublin.*

Members of the Executive Committee elected beside the officers were: Dr. A. Correggiari, *Consultant in Industrial Relations, Milan;* Hugo von Haan, *Acting Director, International Management Institute, Geneva;* Dr. George H. Miles, *Assistant Director, National Institute of Industrial Psychology, London;* Miss Louise C. Odencrantz, *Director, Joint Employment Bureau for the Handicapped, New York;* Spencer Miller, Jr., *Secretary, Workers' Education Bureau of America, New York;* and Dr. Frieda Wunderlich, *Bureau for Social Politics, Berlin.*

The center in the United States for securing publications, membership applications and information regarding the I. R. I. is the Department of Industrial Studies, Room 600, Russell Sage Foundation, 130 East 22nd Street, New York. The preliminary report of the American Section of the Proceedings of the Cambridge Congress is on sale at that address, price twenty-five cents; the complete preliminary report costs $1.25; and the final complete report, when ready, will cost $1.75.

The Personnel Research Federation also has a few copies of Part I of the Proceedings of the Cambridge Congress, and of the American Section of the Report on Conditions and Relations in Industry which will be made available to members on request.

Miss Fleddérus will be in the United States in the interest of the I. R. I. during October and November.

INDUSTRIAL EXTENSION CONFERENCE AT RUTGERS

Approximately 200 representatives of leading industrial firms of New Jersey attended the third annual industrial extension conference held at Rutgers University September 11–12 under the auspices of the University Extension Division.

At the morning session on September 11 a report was given on the state-wide foreman training survey,—a survey conducted by the foreman training committee composed of executives of state industries. In the afternoon, foreman training was discussed both from the company's and from the foreman's points of view. A banquet was held that evening at which addresses were made by Dr. Fraser Metzger, Dean of Men at Rutgers University; W. W. Husband, Assistant Secretary of the United States Department of Labor, and R. S. Binkerd, partner in the firm of James H. Oliphant & Co., New York. Various methods of financing foreman training and their relation to results was outlined by M. A. Chaffee, Supervisor of the Bureau of Engineering, University Extension Division.

At the morning session on September 12 Dr. E. Wayne Rembert, of the Tide Water Oil Co. of Bayonne, discussed engineering night classes for industrial centers; W. T. Elder, of the University Extension

Division, told of the growth of correspondence instruction; and J. F. Tinsley, vice-president and general manager of the Crompton & Knowles Loom Works of Worcester, Mass., spoke on company policies in the field of employee training. Education for industrial executives was discussed by various groups in the afternoon.

JOINT VOCATIONAL SERVICE

The Personnel Research Federation has recently received a communication from the Joint Vocational Service calling attention to the fact that industrial nurses and personnel workers can be secured through this organization. Nurses registered at this bureau have had special training in public health work which is important in factory and store positions. Personnel workers have had special courses in personnel problems or are already experienced in this line of work.

Very careful references are secured for each registrant at the bureau. These, together with a vocational history of the applicant, are sent to the prospective employer. He is thus saved considerable correspondence and can at once weigh the pro's and con's of the several persons he may be considering for a position. The service is non-profit making. No fee is charged to the employer.

The Joint Vocational Service is under the direction of the National Organization of Public Health Nursing and of the American Association of Social Workers. It is the great-grandchild of the Intercollegiate Bureau of Occupations and of the N. O. P. H. N., both organized in 1912. The work, conducted under varying auspices, represents sixteen years of continuous advisory and placement work in the fields of social work and public health nursing.

Employing organizations from all parts of the country are invited to communicate their needs to Joint Vocational Service, Inc., 130 East 22nd St., New York.

FORTHCOMING MEETINGS

A conference of the Eastern College Personnel Officers will be held at Yale University, New Haven, November 9. The program has not been announced to date.

The fall conference of the Department of Education and Vocation of the University Club will be held November 15 and 16 at the Club, 40 Trinity Place, Boston. Information concerning the meeting may be obtained from Stanley C. Lary, Director, at the same address.

Current Periodicals

PREPARED BY LINDA H. MORLEY, *Industrial Relations Counselors, Inc.*

BUDGETS

WILLIAMS, JOHN H. (Consulting Engineer, New York). *Budget as a medium of executive leadership.* Bulletin of the Taylor Society, Vol. 13, p. 166–169. August, 1928.

The budget properly handled furnishes a means of combining instruction and inspiration for creative activity. Flexible budget plan discussed, and a formula given.

COLLEGE MEN IN BUSINESS

GIBSON, A. B. (Westinghouse Electric & Manufacturing Company, Renewal Parts Section, Traction Apparatus Sales). *Helping the college man to find his place.* Trained Men, Vol. 8, p. 81–82. Autumn, 1928.

Westinghouse Electric and Manufacturing Company Technical Sections at Wilkesbarre, Pa., described. The object of these Technical Sections is to afford a broader view of the industrial world, to show the possibilities which lie in the various fields open to the young engineers and to help each man determine which line of endeavor is best suited for his life work.

ECONOMICS

WRIGHT, CHESTER M. (American Federation of Labor). *A challenge to producers.* Printers' Ink, Vol. 144, p. 41–48. August 9, 1928.

The challenge presented is to find a way to make it possible for more people to buy more of the things they want but cannot afford to buy. That the problem is a difficult one is shown by the disconcerting figures based on the census which indicate that notwithstanding the general increase in productivity and prosperity the percentage paid for wages out of the value added by manufacture has decreased from about 52 per cent in 1849 to about 44 per cent in 1921. While the percentage paid for wages out of the total selling value of manufactured products dropped in an almost uniform scale from 1849, when it stood at about 23 per cent, to 1919 when it stood at about 17 per cent.

EDUCATION

LYNCH, A. D. (Personnel Manager, Ohio Brass Company, Mansfield, Ohio). *We let our workers see their jobs in perspective.* Industrial Psychology, Vol. 3, p. 351–354. August, 1928.

Intelligent interest cannot be secured if all the worker knows of the business is his own job. Plan used by the Ohio Brass Company in stabilizing their forces.

MUELLER, A. D. (Worcester, Mass., State Normal). *How to eliminate waste in reading.* Industrial Psychology, Vol. 3, p. 389–392. September, 1928.

Five methods which have given a 400 per cent gain in reading skill to some people.

EDUCATIONAL INSTITUTIONS—PERSONNEL METHODS

AMERICAN COUNCIL ON EDUCATION. *Personnel methods.* Educational Record Supplement, No. 8, p. 1–68. July, 1928.

Report of progress of the Committee on Personnel Methods; Report of the Sub-Committee on Personnel Record Cards, (Foreword, Cumulative Educational Record Forms, Secondary School Cumulative Record Forms, College Cumulative Record Forms); Report of the Sub-Committee on Personality Measurement; Selected bibliography.

EMPLOYEE REPRESENTATION IN MANAGEMENT

BEYER, OTTO S., JR. *Union-management coöperation in the railroad industry.* Proceedings of the Academy of Political Science, Vol. 13, p. 110–127. June, 1928.

Survey of activities along this line.

ELLERD, HARVEY G. (Personnel Department, Armour and Company, Chicago). *Our experiences with employee representation.* Proceedings of Academy of Political Science, Vol. 13, p. 110–119. June, 1928.

Detailed discussion of the Armour Company plan.

LEISERSON, WILLIAM H. (Professor of Economics, Antioch College; Chairman Board of Arbitration, Men's Clothing Industry, 1921–1923; Chicago, since 1923). *Employee representation—a warning to both employers and union.* Proceedings of Academy of Political Science, Vol. 13, p. 96–109. June, 1928.

Company unions and employee representation compared.

ACADEMY OF POLITICAL SCIENCE. *Employee representation plans and labor organizations, discussion.* Proceedings of Academy of Political Science, Vol. 13, p. 139–148. June, 1928.

Herman Oliphant, Henry S. Dennison, Stuart Chase, Warren S. Blauvelt discuss the three papers presented at this meeting.

BRUERE, ROBERT W. *A Quaker employer builds a company union.* Survey, Vol. 60, p. 545–547, 567–569, 573. September 1, 1928.

Coöperative Association of the Leeds and Northrup Company studied. This is the third article in a series by Mr. Bruere on company unions. The first on the West Lynn Works of the General Electric Company appeared in April, 1926 and the second on the Sperry Gyroscope Company in February, 1927.

COWDRICK, EDWARD S. (Industrial Relations Counselor). *Can labor assist management?* Coal Age, Vol. 33, p. 479–481. August, 1928.

Pitfalls and peaks of employee representation.

DONALD, EDITH KING. *Employee representation in an office.* Personnel, Vol. 5, p. 209–212. August, 1928.

Experience of an insurance company.

FORD MOTOR COMPANY

YOUNGER, JOHN (Professor of Industrial Engineering, Ohio State University; Formerly Chief Engineer, Truck Division, Pierce-Arrow Motor Car Company). *Secret of Ford's low costs.* Manufacturing Industries, Vol. 16, p. 117–120. June, 1928.

Rapid flow of work and exactly correct timing to synchronize operations are the basic factors in the company's success.

HEALTH

HEALTH SERVICE. *Classified list of institutions, educational establishments, associations and publications dealing with vocational hygiene and medicine.* Bibliography of Industrial Hygiene, Vol. 3, p. 59–68. March–June, 1928.

Covers Italy. Future issues to cover Belgium, France, Germany and Great Britain.

GREENBURG, LEONARD (M.D.; United States Public Health Service). *Medicine develops with industry's needs.* National Safety News, Vol. 18, p. 15–17. August, 1928.

The industrial physician today is assuming more important functions than the practice of first aid and minor surgery.

INDUSTRIAL WELFARE SOCIETY. *Abnormal sickness among typists.* Industrial Welfare, p. 241–245. August, 1928.

Account of a preliminary investigation by the Society into some causes of, and remedies for, certain high sickness rates among girls doing typing and similar work. English experience.

PUNCH, A. LISLE, AND OTHERS. *Influence of ultra-violet rays on industrial output.* Journal of the National Institute of Industrial Psychology, Vol. 4, p. 144–152. July, 1928.

Results of an investigation in the plant of Messrs. J. Lyon and Co., Ltd., Greenford, Middlesex, England. Eight operators were studied, four of which showed increased output after treatment.

HOUSE ORGANS

LEIGH, RUTH. *Manufacturers' use of retail clerk bulletins.* Printers' Ink, Vol. 144, p. 109–112. August 2, 1928.

Reasons why a four page bulletin is found to be the most practical method of training retail clerks by means of the printed word. Suggestions are given on the bulletin form and content showing best returns, as a result of the analysis of the bulletins issued by many national advertisers. Approximate cost figures are given.

INCENTIVES

FERGUSON, WILLIAM B. (Production Manager, Newport News Shipbuilding and Dry Dock Company). *Twenty-one per cent labor cost reduction.* Manufacturing Industries, Vol. 16, p. 285–290. August, 1928.

In construction of the largest American-built ships, improved methods cut costs, raise wages and forecast production.

HOSFORD, W. F. (Western Electric Company). *Western Electric group bonus methods.* Manufacturing Industries, Vol. 16, p. 273–278. August, 1928.

In two plants employing 24,000 workers 85 per cent of the direct labor and 25 per cent of the indirect labor operate under incentive wage plans.

INDUSTRIAL FATIGUE RESEARCH BOARD OF GREAT BRITAIN

CRAFTS, LELAND W. (New York University). *Studying man at work.* Industrial Psychology, Vol. 3, p. 410–418. September, 1928.

A review of research by the Industrial Fatigue Research Board for the year of 1927.

INDUSTRIAL RELATIONS

INDUSTRIAL RELATIONS—FOREIGN—GREAT BRITAIN. *British industrial peace conference.* Industrial and Labour Information, Vol. 27, p. 106–108. July 30, 1928.

The group of employers associated with Lord Melchett (Formerly Sir Alfred Mond) and the General Council of the Trades Union Congress have adopted the report of the Joint Committee set up after the first meeting of the Conference in January. The subjects covered by the report are as follows: Trade union recognition; Victimisation; National Industrial Council; Prevention of disputes; Rationalization. An abstract of the report follows.

FEDERAL COUNCIL OF CHURCHES OF CHRIST IN AMERICA—DEPARTMENT OF RESEARCH AND EDUCATION. *Industrial review of the year, July, 1927 to July, 1928.* Information Service, Vol. 7, p. 1–7. July 28, 1928.

Covers: Industrial relations; Wages, earning and living costs; A. F. of L. membership; Unemployment; Labor cases in the courts; Legislation; Labor benefits and insurance; Group insurance; Labor banking; Health and education; Housing.

GARDINER, GLENN. *Selling the job to the home folks.* Industrial Psychology, Vol. 3, p. 341–346. August, 1928.

Lack of enthusiastic coöperation from the home folks of the workers brings excess fatigue and turnover. How the "big family spirit" can be developed among the at-homes.

THOMAS, LEON I. (Contributing Editor, Manufacturing Industries). *How can your workers help build up your manufacturing profits?* Manufacturing Industries, Vol. 16, p. 125–128. June, 1928.

Methods from two plants which are successfully securing sincere coöperation from their employees in the production program. Policies and practices in labor relations from the experiences of W. B. Pavey (President, Economy Engineering Company), and Herbert E. Fleming (Vice President and General Manager, The Conover Company).

INSURANCE—SOCIAL

INSURANCE—SOCIAL—FOREIGN—FRANCE. *French social insurance act of March 14, 1928.* Law and Labor, Vol. 10, p. 180–184. August, 1928.

Analysis of the provisions of the act as follows: Financial resources; Sickness benefits; Maternity benefits; Invalidity benefits; Old age pensions; Death benefit; Benefits in respect to family responsibili-

ties; Unemployment guarantee; Voluntary insurance; Special régime; Insurance institutions; General administration and supervision; Settlement of disputes; and Guarantee funds.

JOB ANALYSIS

DONALDSON, A. S. *Specifications for getting a better minor executive, sales clerk and clerk.* Industrial Psychology, Vol. 3, p. 402–404. September, 1928.

Job specifications used by R. H. Macy and Co., in New York City.

LABOR AND POLITICS

AMERICAN FEDERATION OF LABOR. *Labor and the political conventions.* Law and Labor, Vol. 10, p. 169–172. August, 1928.

Presented in tabular form. "What labor asked" is placed in one column followed by the "Reply of the Democrats" and "Reply of Republicans." Reprinted from the Weekly News Service of the American Federation of Labor.

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This study shows very wide variations as between occupations and also as between individual railroads. In 1927 clerks and telegraphers of the six occupa-

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Summaries of papers read by F. M. Earles and A. Macrae at a meeting of the institute. Examples of the vocational guidance work of the writers given.

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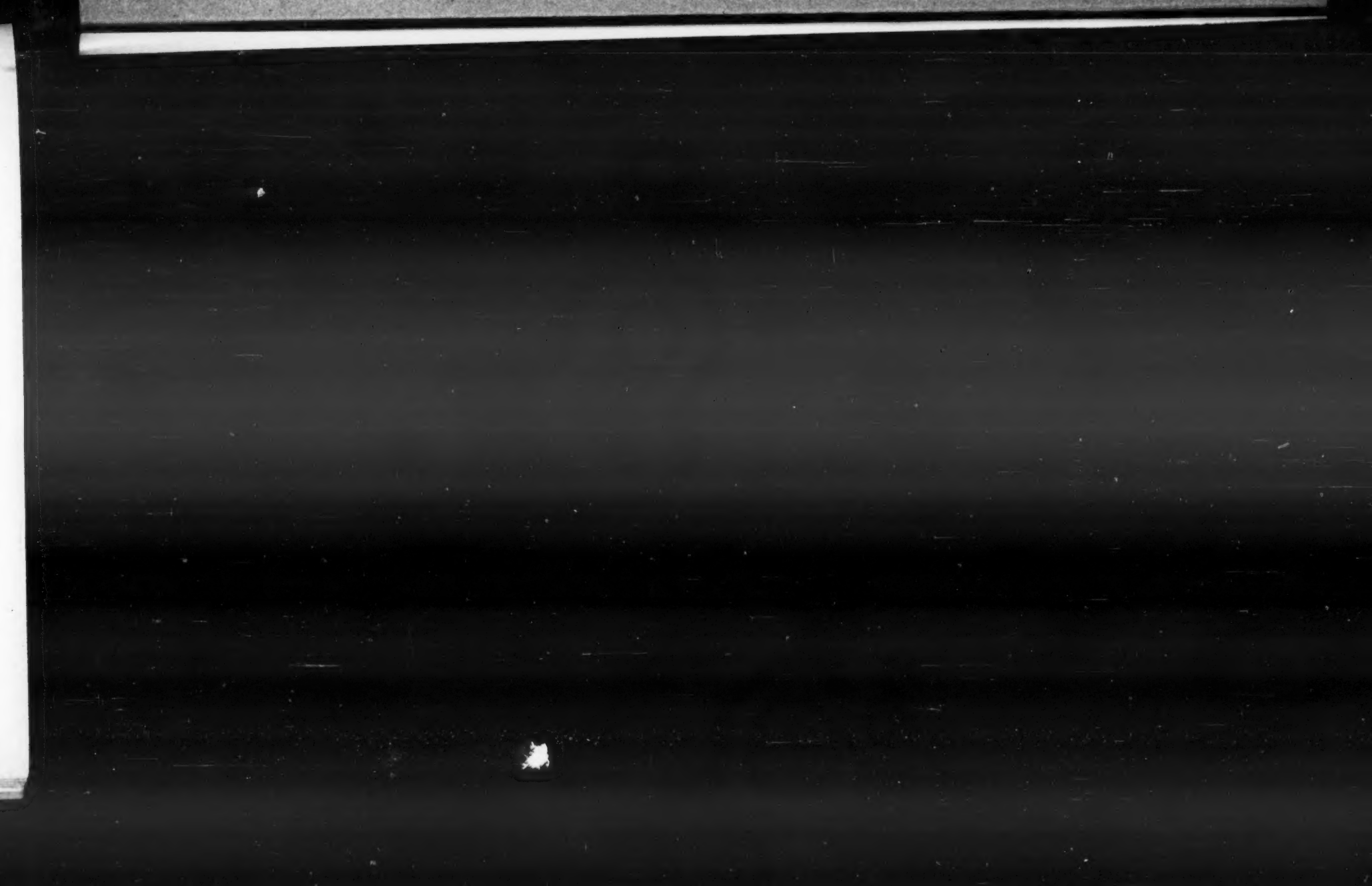

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